A TREATISE

OF THE

MATERIA MEDICA

AND

THERAPEUTICS.

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CHAPTER IX.

D. MEDICINES WHOSE ACTION IS PRINCIPALLY DIRECTED TO THE NERVOUS SYSTEM.

I. *Medicines that Lessen the Sensibility and Irritability of the Nervous System.*

NARCOTICS.

These are stimulants whose secondary effects are a diminution of the vital powers, producing torpor, insensibility, and sleep.

The more prominent effect of this class of remedies being a torpor of those powers of the animal economy which are dependent on the nervous system, we may infer, with reason, that the action of narcotics falls principally on the sensorium commune and its appendages. This, indeed, seems to be demonstrated by

direct experiment with regard to several powerful articles of this class. Brodie* has rendered it extremely probable, by a series of experiments on animals, that the essential oil of almonds, the juice of aconite, the empyreumatic oil of tobacco, and the woorara, produce their deleterious effects by directly destroying the functions of the brain; and that death, from the influence of these substances, takes place, because respiration, which is entirely dependent on the brain, ceases when the functions of this organ are destroyed.

It has been supposed that there is some one particular substance to which narcotics owe their peculiar effects; and many researches have been instituted to detect this supposed narcotic principle. Upon this subject, however, nothing satisfactory has, as yet, been brought to light. Certain substances, it is true, have been extracted from articles of this class, which possess, in a highly concentrated form, their peculiar virtues. Such are morphium and the prussic acid. As these substances, however, are distinct, and differ in their properties, it is evident that neither can be regarded as the narcotic principle. Besides, the greater number of narcotics contain neither morphium nor prussic acid. These two concentrated substances are, therefore, nothing else than distinct and specific narcotics, which, in their natural state, are found united with other substances.

Narcotics have been regarded by some as producing direct sedative effects upon the system. Cullen placed opium at the head of the sedatives. An attentive observation, however, of the progressive effects of these articles, cannot fail to establish the conviction that this sentiment is at variance with the actual phenomena arising from their action on the living system.

* Philosophical Magazine for August, 1811.

In moderate doses, these substances increase the activity of the cerebral functions. The ideas are more vivid and rapid in their succession. Hilarity, and a general agreeable feeling of mind and body—a more ready and vigorous command of the will over the voluntary muscles of the body—a livelier and more excursive imagination—a quicker perception of the relation of things—courage, and vigour, all result from the moderate influence of this class of remedies, and indicate the excited state of the system. If, however, they are applied in augmented doses, the brain soon becomes over-excited, and torpor and debility is the result. If the dose be still more increased, sudden diminution of the vital powers, vertigo, delirium, coma, convulsions, and death, ensue.

The class of narcotics furnishes us with some of the most important remedies we possess. They are applicable in almost all varieties of disease in some stage or other of their course. They are particularly indicated in affections of the nervous system, attended with pains or spasms; and in morbid irritability of the brain and its appendages, unaccompanied by an inflammatory condition of the general system. They, also, have a tendency to lessen the mucous secretions; but, in general, they augment those of the serous and urinary organs.

Narcotics, more than any other class of medicines, lose, by repetition, their action on the system. It is therefore necessary, where a continued employment of such articles is required, gradually to augment the dose, in order to acquire their due operation.

OPIUM.

Opium deserves to be placed at the head of this class, whether we consider its importance as a remediate

article, or its more decided operation as a narcotic. This is the inspissated juice, obtained from the capsules of the *papaver somniferum*, a plant indigenous to Persia, Arabia, and Egypt, and cultivated with us in gardens. This article, as it is found in the shops, is of a dark reddish brown colour externally, and internally of a dusky red. It is opaque, compact, of a peculiar disagreeable, narcotic odour, and bitter acrid taste, with some degree of warmth. It is inflammable and partly soluble in water, alcohol, ether, wine, vinegar, and citric acid. The watery solution becomes transparent on filtration, and possesses the property of reddening the colour of litmus. By adding to this filtered solution, pure ammonia, the carbonates of fixed alkalies, the solutions of oxymuriate of mercury, nitrate of silver, subacetate and acetate of lead, the sulphates of copper, zinc, and iron, and the infusion of galls, precipitates are formed.

According to the most authentic chemical researches, opium contains 1. morphia; 2. narcotin; 3. meconic acid; 4. a peculiar acid, not yet fully investigated; 5. extractive matter; 6. mucilage; 7. feculæ; 8. resin; 9. fixed oil; 10. a substance resembling caoutchouc; 11. a vegeto-animal matter; 12. an odorous principle; 13. sulphate of lime and potass; 14. alumina; and, 15. iron, besides a considerable portion of vegetable remains. Two other principles have lately been detected in opium, both crystallizable, and very peculiar in their chemical relations. One of these principles, discovered by M. Couerbe, is called *meconin;* the other, discovered by Pelletier, has received the name of *narcein*. (Jour. de Pharm. Mars 1832.)

Morphia exists in the opium, and is combined with the *meconic acid*, constituting by their union a meconite of morphia.

Morphia, as it exists in the opium, is combined with

the meconic acid, constituting a meconite of morphia. According to the experiments of M. Faure, however, a considerable portion of extractive matter is always intimately associated with these active principles, "and hence the meconate of morphia cannot be obtained separate from the extractive matter."

Morphia is in the form of white shining crystals, without odour, but extremely bitter. When exposed to a moderate degree of heat, it becomes white and opaque, and loses its crystalline form. "At a higher temperature it melts, forming a yellowish liquid, which becomes white and crystalline upon cooling." It is wholly insoluble in cold water, and soluble in about one hundred parts of boiling water. Cold alcohol dissolves it very sparingly; in boiling alcohol it is readily dissolved, but is precipitated again upon cooling. It is but slightly soluble in ether; but is speedily dissolved by the fixed and volatile oils. Litmus paper, reddened by acids, has its blue colour restored by the solution of morphia, and it converts the yellow of turmeric into brown. Morphia unites readily with acids, forming neutrals salts, decomposed by the alkalies. "The solutions of potassa and soda are also capable of dissolving morphia, which is precipitated slowly on exposure to the air, in consequence of the absorption of carbonic acid. Aqua ammoniæ has, to a certain extent, the same solvent power; and hence the necessity in precipitating morphia by this alkali, not to employ it in great excess." The nitric acid renders morphia of a fine blood-red colour, which by degrees changes to yellow. When the morphia and its salts are added to a solution of iodic acid, "or an acidulous iodate, they redden the liquid and set iodine free." Impure morphia is precipitated from its solutions by the infusion of galls; but the pure gallic acid does not disturb them.

The narcotic powers of the opium appear to reside exclusively in the morphia.

Narcotin, when perfectly pure, is a white, solid, inodorous and tasteless substance, crystallizable in silky, flexible needles. It is insoluble in cold water; soluble in four hundred parts of boiling water, and in one hundred parts of cold, and twenty-four parts of boiling alcohol. It is also dissolved by the fixed and volatile oils. The acids combine with it, and form with it crystallizable compounds, some of which are very bitter, and all of them are soluble in water. Narcotin is precipitated from its solution in diluted nitric acid by the alkalies. "It may be distinguished from morphia by its insipidity and its solubility in ether, by assuming a yellow instead of a red colour, under the action of strong nitric acid, and by not producing, either in the pure or the saline state, with the salts of iron, the blue colour which characterizes morphia and its salts." The best menstrua for extracting the narcotin from opium are the diluted acids, though water also extracts it by long maceration. By whatever process it may be extracted from the opium, it is always obtained mixed with morphia, and may be separated from the latter by treating it with sulphuric ether, which dissolves it without affecting the morphia, and yields it by evaporation.

The effects of narcotin on the animal system have been variously represented. It was at first supposed to constitute the active principle of opium. Magendie declares, that experimenting with narcotin on animals, he found one grain, dissolved in oil, sufficient to produce complete stupor in a dog, which terminated in death in the course of twenty-four hours. This stupor differed very obviously from the tranquil sleep produced by morphia and its preparations in other dogs;

and Magendie concludes that the latter principle—namely, morphia, causes the medicinal anodyne and soporific effects of opium, while the narcotin produces the unpleasant and often distressing effects on the stomach and nervous system, which frequently results from a dose of opium. It appears from the experiments of Derosne and Magendie, that the unpleasant effects of narcotin on the system are very materially diminished, or wholly prevented, by giving it in union with acetic acid. Magendie states, that he introduced twenty-four grains of narcotin, dissolved in vinegar, into the stomach of a dog without destroying the animal's life; and M. Baily gave it to the extent of sixty grains, dissolved in muriatic acid, at a dose, without noticing any effect from it whatever. Orfila, also, knew a man to take thirty grains of it dissolved in acetic acid, without the slightest obvious effect. He states, moreover, that though wholly inactive when dissolved in nitric or muriate acid, yet, when given to dogs, in solution in acetic or sulphuric acid, or in olive oil, thirty or forty grains of it will suffice to produce fatal effects. He found, also, that the solution in active or sulphuric acid, given to animals, invariably gave rise to strong excitement; while a sedative effect constantly resulted from the solution in olive oil.

From all that has been ascertained on this subject, therefore, it is manifest that narcotin, whether given by itself or dissolved in an acid, exerts no very powerful influence on the animal system; and "the narcotic effects which have been attributed to it, have probably arisen from the employment of a preparation not entirely freed from other principles contained in the opium. (U. States Dispensatory.)

Meconic Acid.—This constituent principle of opium, when obtained in a pure state, consists of a white,

solid, crytallizable substance, of an acid taste, followed by considerable bitterness. It melts at a temperature of 220° F., and is volatilized without undergoing any change in its properties. Both water and alcohol dissolves it readily. It possesses the property of reddening vegetable blues, and of producing a blood-red colour with the salts of iron. The meconic acid is not employed in a separate state for medicinal properties. The unpleasant effects which, in certain habits, arise from the use of opium, have been ascribed to this substance; but there does not appear to be sufficient foundation for this opinion.

The effects of opium are evinced, in a greater or less degree, upon whatever part of the system its application is made. Injected into the cellular membrane, it is said to act with great energy, and when introduced into the cavity of the peritoneum, it speedily produces convulsions and death. According to Orfila, "the effects of opium are, in general, more decided when it is injected in glysters, than when it has been introduced into the stomach." By this we are not to understand that the same quantity produces as much or more effect when injected into the rectum, than when taken into the stomach, but simply that the medicine, when applied to the former part, in a suitable dose, acts in a more prompt and decisive way, in consequence, perhaps, of its not being subjected to the action of the digestive powers in this situation,—a circumstance which must very generally take place when it is brought into the stomach. According to Nysten and Orfila, opium acts more energetically when injected into the cellular texture of the body.*

The same writers state, also, that opium does not destroy the contractility of the muscles to which it is

* Orfila's System of Toxicology, p. 250.

applied; and that a heart will continue to contract for a considerable time, when plunged into a solution of opium. This, however, is contradicted by Wilson Philip,* who states that, although he found opium, when applied to the external surface of the heart and alimentary canal, to produce no sensible effect on their muscular power; yet, when brought in contact with their internal surface, it produced "the same effect as when directly applied to the muscular fibres themselves, immediately, unless the quantity be extremely small, impairing their power, and destroying it instantly, if the quantity be considerable."

Opium is said to produce no particular effects when applied immediately to the brain or nerves, and yet it is supposed, by the same physiologists who make this assertion, that the poisoning effects of this article depend on its absorption into the circulation, and its direct action upon the brain. This contradiction, for such it appears to be, can only be reconciled by supposing that the action of this narcotic is less powerful when applied directly to the medullary substance of this organ, than when it acts, through the medium of the blood, on the internal surface of its capillary vessels.

The question, whether opium is to be regarded as a sedative or an excitant, has been much agitated, and it is still considered by some *sub judice*,—as an unsettled point.† The prevalent opinion, however, at present is, that opium is unequivocally a stimulant. To me, indeed, nothing seems to be more demonstrable than this point. Orfila quotes Tralles as being the first who held opium to be a stimulant.‡ To the celebrated John

* Inquiry into the Laws of the Vital Functions, 2d edition.

† Pharmacologie Générale, par M. Barbier, M.D. 1816.—In this work opium is considered as essentially sedative in its effects.

‡ Uusus Opii Salubris et Noxius in Morborum Medela Auctore. Balthas. Lou. Tralles. 4to, 1754.

Brown, however, must be ascribed the merit of having fully demonstrated the excitant properties of this article.

The effects of opium vary greatly according to the quantity given. In small doses it sensibly excites the nervous and vascular systems. The cerebral functions in particular, are rendered more active and energetic. Volition is stronger and more prompt, and a temporary vigour is felt in all the voluntary exertions of the body. Vivacity and joyfulness,—courage and ambition,—indifference, or rather defiance to the ills of life; and, in short, all those delightful feelings which spring from a conscious energy of mental and bodily power, and an absence from painful or unpleasant sensations, arise from a well regulated dose of this medicine.

If the dose be augmented its narcotic effects become more conspicuous. A species of drunkenness ensues; the blood becomes congested in the vessels of the brain; the mind is unsettled and incoherent; voluntary motion is performed with less freedom; the sensibility is diminished; the eyes are suffused, and vision is indistinct. Finally, the voluntary motions are suspended; the sensorium commune ceases to exercise its control over the animal functions of the system, and profound and heavy sleep weighs down every conscious faculty. If the dose has been very large, the sleep becomes more and more lethargic; the sensorial power is rapidly impaired, in consequence of which, respiration is imperfectly performed, the blood ceases to receive its due proportion of oxygen in the lungs, which tends still further to diminish the cerebral functions, until finally they stop altogether, and with them all the other movements of the animal system.

Such are the immediate effects of an excessive dose of opium. There are other consequences, however, which follow its long continued or habitual use, demon-

strating with equal force the deleterious influence of this article upon the living economy, when improperly taken.

The habitual opium taker, unless he is under the immediate influence of this potent narcotic, evinces all the symptoms of physical and intellectual imbecility. He is timid, low-spirited, and pale; he experiences a tormenting anxiety of feeling; is totally disinclined, as well as unfit, for mental and bodily exertion; he is peevish, and feels pains in different parts of the body; his extremities are cold; indigestion torments him; he cannot sleep, and feels a tremor throughout all his body. When the system is entirely free from the influence of the accustomed stimulant, torments of the most distressing kind are experienced.

The following, therefore, may be enumerated as the ordinary effects of this narcotic on the animal system:

1. Its primary effect in a small or regular dose is, an increase of the force and frequency of the pulse. When given in a very large dose its excitant operation is extremely transient, and the pulse almost immediately becomes fuller and slower.

2. It diminishes muscular irritability, and lessens the peristaltic motions of the intestinal canal. It not unfrequently, likewise, occasions a difficulty and pain in making water.

3. It lessens some of the secretions, whilst it augments others. Thus, it diminishes the secretion of the gastric and pancreatic juices, and the mucus of the bowels, occasioning thereby a dryness of the mouth, fauces, and the intestinal canal, attended by thirst, inappetency, indigestion, and emaciation. It lessens, also, the mucous secretion of the bronchia and nose. The secretion of bile,* too, according to the opinion of

* "The fæces of persons," says Dr. Paris, "after the use of opium, are not unfrequently clay-coloured, from the suspension of the biliary secre-

some, is diminished by the action of opium. The serous secretions, on the contrary, especially that of the skin, are considerably augmented by the use of this article. In many persons it produces a singular pruritus, and in some a papular eruption on the surface of the body. It increases, also, the aqueous exhalation from the lungs;* and one of its most constant effects, when frequently or habitually taken, is to augment the secretion of urea by the kidneys.

4. It at first excites, but afterwards lessens, the sensorial powers; inducing torpor, insensibility, and sleep. Hence its applicability in all cases where there is pain and nervous irritability, unaccompanied with an inflammatory condition of the system.

Opium is generally employed in substance, or in the form of tincture. Where we wish to produce a sudden impression, the tincture should be given; as in this form it will be immediately diffused through the stomach, and more speedily applied to an extensive surface of its inner coat, than when given in the shape of a pill, which requires a considerable time for its solution and its entire application to the part upon which it is to act.

Upon some individuals the effects of opium, even in very small doses, are extremely distressing; so much so, indeed, that they cannot be induced to take it, however urgent the symptoms may be which demand its employment. It sometimes produces much nausea and vomiting, attended with a peculiar distressing sensation in the head. In other instances it gives rise to harassing restlessness, nervous tremors, and a feeling of anxiety and sinking in the præcordium. In some individuals it occasions a general febrile irritation with pain

tion." Burdach, on the contrary, asserts that opium increases the secretory action of the liver.

* Burdach, Arzneimittellehre, B. iii. S. 491.

and a sense of fulness in the head, and sometimes more or less delirium; in others it gives rise to great faintness or partial syncope, with a general feeling of great uneasiness and distress. In many instances these disagreeable effects may be obviated or greatly diminished, by exhibiting the opium with some of the vegetable acids, as vinegar, lime juice, &c.; or by giving it in union with an alkali, particularly the carbonate of potash. One grain of opium rubbed up with ten grains of carb. potas. and dissolved in about an ounce of water, may, in general, be taken by such persons without the least inconvenience. The black drop,* as it is called, is also an excellent preparation, and may be taken by persons who cannot endure the opium in its solid form. Dr. Porter, of Bristol, England, states, that a solution of opium in the citric acid possesses several very important advantages.† It is said that this preparation is a very powerful anodyne, "operating with less disturbance than the more ordinary forms of this substance."

Dr. Paris observes, that "a watery infusion, made

* The following is the formula for making this useful preparation:

"Take half a pound of opium sliced, three pints of good verjuice, (juice of the wild crab,) and one and a half ounce of nutmegs, and half an ounce of saffron. Boil them to a proper thickness, then add a quarter of a pound of sugar, and two spoonfuls of yest. Set the whole in a warm place near the fire for six or eight weeks, then place it in the open air until it becomes a syrup; lastly, decant, filter, and bottle it up, adding a little sugar to each bottle." One drop of this preparation is equal to about three drops of the tincture of opium, of the London Pharmacopœia. "This preparation," says Dr. Paris, "which has been long known and esteemed as being more powerful in its operation, and less distressing in its effects, than any tincture of opium, has, until lately, been involved in much obscurity; the papers, however, of the late Edward Walton, of Sunderland, one of the near relations of the original proprietor, having fallen into the hands of Dr. Armstrong, that gentleman has obliged the profession by publishing the manner in which it is prepared."

† The following is the formula for its preparation: liquor morphi citratis. ℞ opii crudi opt. ℥iv. acidi citrici (cryst.) ℥ii.; semel in mortario lapide contunda, dein aquæ distillatæ bullientis O.j. affunde; et intime misceantur; macera per horas viginti quatuor; per chartam bibulosam cola.

by infusing powdered opium in boiling water, will often operate without producing that distressing nausea and headache, which so frequently follow the use of this substance."

When opium cannot be retained on the stomach, it may be applied by frictions to the external surface, in combination with olive oil or camphorated liniment.

Dr. Chapman, however, asserts that the practice of applying opium as an embrocation, "is altogether delusive, and deserves no attention. Let it be managed as it may, opium applied to the surface, in any form, produces no constitutional impression. Yet," continues he, "as a mere local remedy to assuage pain, I have no doubt of the efficacy of such applications." To me there appears much inconsistency in all this. If opium "assuages pain as a local remedy," it must act upon the sentient extremities of the part to which it is applied. I can, however, see no reason why it should be capable of "producing constitutional impressions," when acting on the sentient extremities of the stomach, and not do the same thing when it acts on the nerves of the surface. I am, indeed, entirely convinced, both from my own experience and the testimony of others, that the opinion so confidently advanced by Dr. Chapman, upon this point, is wholly without foundation. When applied to a surface divested of its cuticle, *morphia*, or its salts, never fails to produce very considerable anodyne and soporific effects on the system. This is, indeed, a most excellent mode of employing opium, when from idiosyncrasy, or other circumstances, it cannot be conveniently administered internally. I have, in many instances, obtained prompt and highly satisfactory soporose and anodyne effects, from the application of the sulphate of morphia in this way. If the cuticle be removed from any part of the surface, by

means of a small epispastic (about an inch in diameter), and one or two grains of morphia sprinkled on the denuded part, the narcotic effects will be as prompt and decided as if a full dose of opium had been taken into the stomach; and so far as I have observed, always without any of the disagreeable consequences which frequently arise from its internal administration. Opium will also act promptly when introduced into the rectum, either in a solid form or dissolved and injected as an enema.*

Incompatible substances: oxymuriate of mercury, acetate of lead, alkalies, infusion of galls and of yellow cinchona, infusion of coffee.

I shall now proceed to an account of the practical application of this article in the cure of diseases, which will tend still more fully to develope the nature of its important properties.

As, along with its excitant virtues, it possesses the power, by its secondary effects, to lessen the sensibility and irritability of the system, it is applicable in all those febrile diseases where any of the vital organs are in a state of irritation, or morbid irritability, and unattended by high inflammatory vascular action.

In the advanced stage of typhus fevers, when there is much restlessness, vigilance, and a small, frequent, and weak pulse, attended with delirium, subsultus tendinum, and other symptoms of nervous irritation, opium is one of our best remedies. In such circumstances, Cullen says, it may be employed freely and generally in large doses, repeated every eighth hour, unless sleep, and a remission of the delirium should allow of longer intervals.

Dr. R. Grattan, in a late report of the Dublin Fever Hospital, speaks in very high terms of the employment

* Paris's Pharmacologia, p. 469.

of opium in the delirium of typhus. "Where delirium prevails," says he, "to a considerable extent, and no sleep has been procured after the head has been shaved, the temporal artery opened once or twice, the nape blistered, and purgatives administered, and more particularly should it be near the close of the disease, an anodyne, with from twenty-five to thirty drops of the tincture of opium, and as many of the vinum ipecacuanhæ, repeated every third or fourth hour until sleep is procured, will be found to produce a marked change for the better."*

In typhus, attended with local inflammation within the chest or abdomen, opium, combined with camphor, and a very minute portion of tart. antim. often affords very considerable advantages. During the epidemic typhoid pneumonia, which raged in almost every section of the United States during the cold seasons of the years 1812–13–14, I had frequent opportunities of witnessing the good effects of this combination. Where the pain in the chest was very severe and the pulse small, weak, and frequent, I generally derived much advantage from the exhibition of a quarter of a grain of opium with five grains of camphor and one-sixteenth of a grain of tart. antim. every two hours.

It should be observed, however, that when the delirium, &c. depends on arachnoid or cerebral inflammation, which is frequently the case in the latter stage of typhus, opium can hardly fail doing much injury. It is only when the cerebral disturbance depends on mere irritation of the brain, without actual inflammation, that this narcotic can be employed with propriety. When, therefore, the delirium is attended with great pain in the head, an injected state of the eyes, a flush on the

* Transact. of the Association of Fellows and Licentiates of the King and Queen's College of Physicians, Ireland, vol. iii. p. 440.

cheeks, and intermitting muttering raving, the propriety of administering opium will be extremely doubtful, and if resorted to at all, should be administered with great caution.

Opium has been recommended in every stage of intermittent fevers. Dr. Trotter* gave it in the cold stage, and he speaks very favourably of this practice. A full dose of this article, taken a half or a whole hour before the accession of the paroxysm, exhilarates the spirits, the surface becomes relaxed, the countenance flushed, and assumes a calm and cheerful appearance, and the pulse, from being weak, oppressed, frequent, and irregular, becomes full, equal, and more natural. Stork says, that this practice has been sometimes attended with injurious consequences. I have, however, frequently employed opium in this way, and generally with evident advantage, and never with any injurious effects. By Lind, Cullen, Hegewisch, and others, this medicine is recommended in the hot, instead of the cold, stage. When given in this stage, it produces, according to the observation of Lind, the following salutary effects. 1. A curtailment and diminution of the violence of the paroxysm. 2. Relief to the disturbance and pain of the head, abatement of the burning heat of the surface, and a copious perspiration. 3. Refreshing sleep, from which the patient awakes bathed in sweat, and nearly free from all complaint. The sweat which follows the exhibition of opium, brings on an agreeable softness of the skin, and lessens very much the burning sensation which attends the sweating stage. It is said also by Lind, that the employment of opium in this way, renders the operation of the bark more efficacious. From a very considerable experience in this disease, I am led to regard

* Medicina Nautica.

the use of opium, in its hot stage, as a very useful, and by no means hazardous practice. It certainly very generally expedites the accession of the sweating stage, and thereby shortens the paroxysm.

In gastritis and enteritis, whether idiopathic or secondary, opium is often of great service. "When given in health," says Dr. Armstrong, "it constipates the bowels, but this is so far from being the case in gastritis and enteritis, that it tends to assist the action of purgatives;* and when exhibited in these complaints in conjunction with proper depletion, it may be fairly accounted one of the best remedies."† In that species of enteritis which sometimes accompanies puerperal fever, the same eminent writer asserts, that he has employed opium as a principal remedy where the lancet and active purges could not be used.‡ In these cases the dose should be large; from sixty to one hundred and twenty drops are to be given, according to the urgency of the symptoms, and repeated, if the pain does not abate by the first dose. The two remarkable effects of this remedy, in gastritis and enteritis, are, an abatement of the pain and a reduction of the pulse. "The patient often falls asleep shortly after the exhibition, and the pulse, which had been previously small and quick, becomes full and slow."§

It is not so difficult to account for the aperient effects of opium in such cases as might at first sight appear. As the contractility and sensibility of the bowels are much augmented in consequence of their inflamed condition, it is quite probable that the constipation depends,

* In a note to Cullen's Materia Medica, Dr. Barton, speaking of the effects of this article in dysentery, says, "It is a fact, that sometimes no medicine more effectually procures stercoraceous stools than opium."

† Armstrong on Puerperal Fever, p. 171.

‡ Ibid. 172.

§ Ibid. 174.

in a great measure, on the preternatural contraction of their muscular fibres, occasioned by their augmented susceptibility to the irritation of their contents. Opium, therefore, by lessening the irritability and sensibility of these parts, prevents the common irritants from throwing them into preternatural contraction, and thereby does away a principal cause of the constipation. By determining to the cutaneous exhalents, too, a property which opium possesses in an eminent degree, there is a direct derivation made from the internal inflamed, to the external surface, affording a most powerful auxiliary for the reduction of the local affection.

Much has been said in favour of the employment of opium in the treatment of acute hepatitis. Dr. Robert Hamilton, many years ago, published observations illustrative of the good effects of this narcotic in union with calomel in this affection. Dr. Johnson, too, says, "that in conjunction with antimonial powder, opium forms a most admirable auxiliary to mercury in acute hepatitis;" and Dr. Armstrong has published statements equally in favour of this practice. My own experience enables me to testify my confidence to the usefulness of this combination in the treatment of this disease. It is proper to observe, however, that the general and local inflammatory action, should be moderated by blood-letting and mercurial purgatives, before the use of the opium is resorted to; and that it should always be administered in conjunction with calomel. After the violence of the disease has been subdued by prompt and efficient depletory measures, from three to five grains of calomel with a grain of opium, may be given every four hours, and continued until the gums are effected.

In the treatment of acute peritonitis, also, opium may be employed with great advantage. After the

violence of the local and general inflammatory action has been moderated by blood-letting, purgatives, and fomentations of the abdomen, the administration of opium in union with calomel, is sometimes attended with highly beneficial effects. "In puerperal fever," says Dr. Armstrong, "in which the peritoneum chiefly sustains the intensity of the inflammation, *opium* may be given with considerable advantage, particularly when the local pain and constitutional irritation are excessive; though, in the stage of excitement, it must not for a moment be forgotten that bleeding and purging are the principal measures. When the stage of collapse approaches, opium may, perhaps, be accounted the primary measure. Whenever opium is administered in any abdominal inflammation, the *dose should be large;* for a small dose often stimulates, whereas a large one is a direct sedative."

In the earlier stages of inflammatory rheumatism, opium is an improper remedy on account of its stimulating properties. When, however, employed in combination with other articles which give it a more decidedly diaphoretic operation, it may often be used with good effect very early in the disease; but as a general rule, it will be best to abstain from this remedy, even in its combinations, until the inflammatory character of the disease has been somewhat reduced by antiphlogistic measures. When this has been done, opium is a valuable remedy. I am decidedly of opinion, that if opium be given at all in inflammatory diseases, it should be exhibited in very large doses. Large doses appear to be less stimulating than small ones. The sensibility and irritability of the system is greatly reduced by a large dose of this narcotic, and with them all those morbid conditions of the system which depend on, or are influenced by, a preternaturally excited state

of the vital properties. Experience, at least, has convinced me that we may sometimes procure permanent relief from a very large dose of this medicine, in the present disease, after small ones have been found to aggravate its symptoms. After proper depletion, I have often given as much as four and five grains for a dose, and with results more favourable than my experience would lead me to expect from smaller doses. When there is intense pain in any part of the body, opium may be given in very large doses without producing its ordinary narcotic effects on the system. "It is worthy of consideration," says Scudamore, "that, so powerfully does pain modify the influence of opium on the nervous system, in every kind of disease, that it may be given in the boldest doses without hazard or ill effect when pain is intense; and in no way, except by the active repetition of such doses, can it be really efficacious when the occasions for it are urgent."*

Opium, however, is chiefly useful in those cases of subacute rheumatism where the pains are wandering, and the pulse is hard, small, and frequent.† In cases of this kind it should be given with a view to its diaphoretic effects; and, to insure these, it must be combined with antimonials, or given in the form of pulv. ipecac. compos.

To mitigate the distressing pains in gout, opium is the most important remedy we possess. Its advantages, however, as is observed by Scudamore, depend on the mode of its employment, both as to preparation, dose, and the particular circumstances of the case. If the inflammatory diathesis be considerable, and the bowels constipated, antiphlogistic and aperient remedies must be employed before opium is resorted to. With respect, however, to the first of these objections to the

* Treatise on the Gout and Rheumatism, p. 124.

† Ettmüller de vi Opii Diaphoretica, p. 48.

free employment of opium, Dr. Scudamore makes the following very judicious observations:—"Sir E. Home, in an interesting paper 'on the influence of the nerves upon the action of the arteries,' has related several experiments which unite very well in the support of my present conclusion, that, in inflammation dependent on local and general irritation of the nerves, our rules of treatment must often be varied from that which we observe in the primary excessive action of the vessels in common inflammation, from which the nerves become affected in a secondary degree. On many occasions, in the gouty paroxysm, when the patient has described the pulsatory throbbing of the inflamed part to resemble almost the successive blows of a hammer; when the heart has been in inordinate action, and the inflammatory diathesis has appeared altogether urgent, I have stood by the bed-side and witnessed the happy power of a free administration of opium, in causing an abatement of the action of the vessels, and producing universal tranquillity in a short time."

In chronic catarrhal affections, or in recent cases unattended by any considerable phlogistic diathesis, opium is a remedy of very great value. It is particularly useful in those long standing catarrhal affections of old people, where there is too abundant a secretion of bronchial mucus. In cases of this kind, small doses of opium check the inordinate secretion of the mucus, and allay irritation, not only by their direct narcotic influence upon the mucous membrane, but also by diminishing the secretion of the irritating matter in the bronchia.

In catarrhal affections, opium is best given in the form of camphorated tincture. Where the expectoration is sparing, as it often is in recent cases, opium, in its uncombined form, is of doubtful efficacy; for,

although it may allay irritation, it has a tendency still further to diminish the mucous secretion of the bronchia, and thus to prevent the inflamed vessels from relieving themselves by an augmented discharge. In cases of this kind, therefore, we must give it in such combinations as will enable us to obtain its soothing effects without diminishing the expectoration. For this purpose it will be necessary to combine the opiate with some expectorant remedy. The syrup of squills, mixed with paregoric elixir, is, perhaps, as useful a combination of such remedies as we possess.

In pneumonia, opium can seldom be a proper remedy. In the beginning of pulmonic inflammation the stimulus of the opium would be injurious, by its direct tendency to increase the inflammation, and in the latter stage, by diminishing the bronchial secretion, whereby nature is relieving the engorged vessels of the inflamed organ. To this, however, there are exceptions; and we occasionally meet with circumstances in the more advanced stage of peripneumony, which indicate the propriety of a recourse to this remedy. Where the disease has been so far subdued as to put off its more inflammatory appearances, and a troublesome cough keeps up some degree of pain, inquietude, and want of sleep, opium, combined with squill, gum ammoniacum, or some other active expectorant, is an indispensable remedy.

With regard to the employment of opium in pulmonic diseases attended with catarrhal symptoms, it may be laid down as a general rule of practice, that where the cough is not accompanied by an expectoration sufficiently copious, the opiate should be given with some expectorant. Where, on the contrary, the cough is attended by an expectoration too profuse, but not critical, opium uncombined, or in the form of its simple or compound tincture, is the best mode of exhi-

biting it. It is also to be observed, that in all cases where a copious secretion of bronchial mucus occurs as a critical discharge, as in the resolution of pulmonic inflammation, opium is a hazardous remedy, except it be given in very small doses, and combined with some active expectorant.*

In the advanced stages of phthisis, opium is the best, and, in fact, almost the only palliative we possess. It lessens the frequency and violence of the cough,—checks the colliquative alvine discharges, and in its ultimate but not least benign influence, assuages the pangs of parting life. Its euthanasial virtues in this, as well as in many other diseases that lead with unerring steps to the grave, are, indeed, amongst its most admirable qualities, and would alone be sufficient to entitle it to the greatest attention.

In the treatment of small-pox, opium is often of essential service. Where the suppuration does not go on regularly, and there exists a great deal of restlessness, opiates, cautiously administered, generally are very useful. They must not, however, be given when the excitement runs high; and where they are indicated, it is proper to administer them with gentle laxatives to obviate their constipating effects. In the maturating stage of the confluent form of this disease, opium, when used with these precautions, allays restlessness and pain, without improperly interfering with the regular progress of this disease.

In scarlatina, I can say little of the employment of opium, from my own experience. But there can be no doubt that circumstances may arise in this, as in almost every other disease, which will indicate the propriety of this remedy. Where the eruption does not appear freely, or remains back entirely, and the pulse is quick,

* B. J. Tralles de Opii suspecta ope in Pleuritide Curanda, 1774.

tense, and small, accompanied by a pale skin, and an anxious, oppressed breathing, opium may be given, in some diaphoretic combination, with advantage.

In the treatment of dysentery, opium is a most valuable remedy. Sydenham regarded its employment as indispensable in this disease. "Ita," says he, "necessarium est opium in hominis periti manu, ut sine illo manca sit, ac claudicet medicina."* Cullen, however, influenced by his speculative notions concerning the nature of this disease, regarded opium as a "precarious remedy," and "to be avoided as much as possible." As, according to his sentiments, dysentery is always essentially connected with constriction of the bowels, he apprehended that the employment of opium in its treatment, would tend still further to increase the constriction, and to lock up the irritating matters in the intestinal tube. That these fears are by no means well founded, seems to be conclusively established by the concurrent testimony of a great majority of our best writers. I have already said, upon the authority of Drs. Armstrong and Barton, that although opium tends to constipate when taken in health, yet when the bowels are inflamed or highly irritated, as they are in dysentery, its tendency to this effect is much less than might be supposed; and when administered with proper laxatives, it often aids considerably in bringing off stercoraceous stools. Be this as it may, I think it quite certain, that whenever opium is injurious in dysentery, it arises from its tendency to increase the inflammatory excitement of the system, and not from its supposed constringing influence on the bowels. In commending the powers of opium in dysentery, it must, however, be well understood that it is not to be employed without a particular attention to the state of the general circulation. In the commencement of the disease, when the

* De Dysenteria, anno 1660.

febrile symptoms run high, opiates would be obviously improper. It is not, therefore, until the general excitement has been somewhat reduced by anti-inflammatory measures, and the bowels evacuated by laxatives, that opium can be employed with propriety in this disease. I do not, however, think it necessary that we should in general delay administering opiates until the system is much exhausted, or the general excitement greatly reduced. Given in large doses, and in combination with a suitable laxative, as ol. ricini, it will often afford the happiest effects, at an early period of the disease, provided the inflammatory symptoms have been previously mitigated by depletory measures. In the latter stage of this disease, opium is, for the most part, absolutely indispensable. The dysenteric discharges are sometimes kept up by a relaxed state of the bowels, attended with an irritated pulse and a dry and harsh skin. Here it would be in vain to look for a more suitable remedy than opium. In chronic dysentery it is very advantageously combined with calomel, a combination, indeed, upon which our principal reliance is, in general, to be placed in its treatment. From the intimate connexion which exists between the external surface of the body and the mucous membrane of the intestinal tube, it is evident, that on the principle of derivation, much advantage may be gained by exciting the vessels of the skin. It is, therefore, proper in most cases, to combine the opiate with some other article, which, without interfering with its anodyne properties, will increase its tendency to act upon the cutaneous exhalents.

A solution of opium in some mucilaginous fluid, injected in the form of an enema, is highly serviceable in relieving the urgent and painful, but ineffectual efforts of the tenesmus in this complaint.

As opium lessens both the secretions of the bowels

and the irritated motions of their muscular fibres, its action is directly adapted to the suppression of colliquative alvine discharges. In diarrhœa, accordingly, it generally acts very beneficially. Given in combination with very minute portions of calomel, it constitutes one of the most important remedies we possess in the treatment of such cases. I have repeatedly put a permanent stop to chronic discharges from the bowels, by exhibiting a quarter of a grain of opium with one-eighth of a grain of calomel every four hours, after various other modes of treatment had been tried ineffectually.

In cholera, opium may afford important advantages by proper management. After the contents of the stomach and bowels have been well washed out by copious draughts of diluents, opium ought to be given in large doses, to allay the irritation of these parts. It is to be particularly recollected, that little advantage will be gained from this remedy, unless it be exhibited in very large doses. From two to four grains, according to the urgency of the symptoms, should be administered every two hours until relief be obtained.

The employment of opium, in union with calomel in the Asiatic cholera, has received the sanction of nearly all who have treated this formidable malady. My own experience has convinced me that moderate doses of opium, administered at regular and short intervals in combination with calomel, is one of the most useful remedies we possess in the management of this disease. It cannot be doubted, however, that opium has often been employed to an injurious extent in this malady. When given in very large doses, the general sensibility and irritability of the system will be still further blunted, and the vital actions consequently reduced; or the blood will be so powerfully determined to the head, when the vital powers begin to react, as to occasion

fatal oppression of the brain. A half a grain of opium with from ten to twenty grains of calomel may be safely administered every hour; and I am inclined to believe that all the disadvantages which can be derived from these two remedies may be obtained from doses of this size.

In the cholera of infants this article is of doubtful efficacy. It can never, I apprehend, be employed in this disease, unless it be in its chronic form, without considerable risk. In the acute form of cholera infantum, there is a very strong tendency to cephalic affection. Many of those who die of this disease, exhibit, before death, all the characteristic symptoms of hydrocephalus. Be our speculative notions what they may with regard to the pathology of this disease, it is certain, I think, that the cerebral affection so frequently observed in its ultimate stage, depends on an irritation communicated to the brain from the primary abdominal disorder. Whatever, therefore, has a tendency to increase the determination to the head, cannot fail to augment the danger in this disease. Opium possesses this power in an especial manner; and I am warranted by experience to declare, that its tendency in this way renders it, for the most part, an unsafe remedy in this disease.

Of the virtues of opium in dropsy I can say nothing from my own experience. It has, however, been recommended by some writers as being of considerable efficacy in cases attended with a relaxed and debilitated habit of body.* Mr. John Mason, surgeon at Leicester, in a letter to Dr. John Fothergill, relates two cases of dropsy successfully treated by moderate doses of opium. The first patient, a female in the fortieth year of her age, after having twice submitted to the opera-

* Burdach, Arzneimittellehre, B. iii. s. 503.

tion of paracentesis, was effectually cured by taking once or twice a day, a tea-spoonful of a tincture of opium, made by infusing ʒss. of this article in a pint of gin. The second patient, also a female, aged forty-two, took opium from about two-thirds of a grain to a grain and a half every night on going to bed, and was entirely cured by it.* In dysury, from a paralytic state of the bladder, or a spasmodic contraction of the passages, opium is said to be highly useful when injected into the bladder in the form of a weak aqueous solution.

Opium occasionally produces very beneficial effects in diabetes. Dr. Ferriar gave it in combination with bark and uva ursi, in the proportions of a scruple of each of the latter to half a grain of the opium; and his success appears to have been very considerable, having cured ten cases out of thirteen. He directed the use of lime-water and an animal diet whilst using this remedy. Dr. Prout considers opium the most efficacious remedy we possess in diabetes. Dr. Elliotson, also, reports three cases, treated principally with opium, in which its beneficial effects were conspicuously evinced. He gradually carried the dose to the extent of ℈j. bis. die.† "On looking over the tabular view presented by Dr. Elliotson," says Dr. Prout,‡ "we find that the first immediate effect of opium upon the urine is, to increase its specific gravity. This is what might have been expected from this remedy, and evidently depends upon the diminished secretion of water, while that of sugar remains unaltered, by which the urine is, of course, rendered more concentrated, and consequently heavier. As the remedy is persevered in, the urine

* Medical Observations and Inquiries, vol. vi. p. 19.

† Numerous cases illustrative of the efficacy of hydrocyanic or prussic acid in affections of the stomach, &c. p. 89.

‡ On Calculous Diseases, p. 76.

acquires its original specific gravity, and even becomes lighter. The quantity of sugar is diminished, and that of urea much increased, even sometimes so as to become greater than natural. Lithic acid makes its appearance often in abundance, a substance which has been denied to exist in diabetic urine; and the urine acquires altogether a more natural colour and appearance, and is rendered much less prone to undergo the vinous fermentation."

Opium is a principal remedy for obtaining temporary relief from those distressing pains of the stomach which frequently attend indigestion. In such cases it ought to be given in small doses. "Large doses of this medicine," says a late writer, "have no place in the treatment of indigestion, except for the purpose of relieving severe pain. They tend to increase the other symptoms. Very small doses, however, two or three minims of tincture of opium, for example, repeated two or three times a day, often prove highly serviceable in allaying morbid irritation, and their constipating effect is generally easily counteracted. They sometimes, indeed, have very little of this effect."* According to this writer, the pulvis ipecacuanha compositus is the best form for exhibiting small doses of opium in this disease. "From two to four grains," he observes, "of this preparation, given every six or eight hours, appear to have a peculiar effect in allaying the irritations attending indigestion. It appears to be best adapted to those cases in which that combination of languor and restlessness, often so remarkable in this disease, prevails." All this accords entirely with my own experience; I have been much in the habit of exhibiting small doses of this medicine in the gastric pains attendant on indigestion; and as a means of temporary relief,

* A Treatise on Indigestion, by A. P. W. Philip, M. D., p. 181.

I know of no other remedy so uniformly effectual. In exhibiting opium, however, in this disease, it is of the utmost consequence to the welfare of the patient, to guard against his forming a habit of taking this substance. It should, therefore, never be long and regularly given; but only occasionally resorted to, when the symptoms which indicate its employment are urgent. This precaution, though highly important in all circumstances under which the frequent employment of opium seems to be necessary, ought to be especially impressed upon those who are obliged to resort to its use in indigestion. For the dyspeptic is not only a sufferer in body but also in mind. He is often overwhelmed by a despondency which is even more insufferable than his bodily pains. If, in such a state, he once experiences the tranquillizing effects of opium, he will resort to it again and again, for relief from his sufferings, until, from habit, he can no longer do without it.

With regard to the exhibition of opium in hæmorrhages, it may be observed, in a general way, that in all cases where venesection is indicated, it cannot be employed with safety. In hæmoptysis, however, attended with a spasmodic or irritable state of the system, cold extremities, anxiety, restlessness, paleness of the face, alternating with sudden flushes, pale urine, small and contracted pulse, and a troublesome cough, opium is not only a safe, but an indispensable remedy. Richter,* who greatly extols the powers of opium in such cases, says that it should be given in combination with camphor or ipecacuanha, and administered in large and frequent doses. From my own experience I can say nothing of its curative powers in hæmorrhagy. There can, however, be little doubt of its entire adapta-

* Specielle Therapie, von G. A. Richter, M. D., b. iii. s. 297.

tion to cases attended with the particular circumstances just enumerated.

In colica pictonum, opium is a very valuable remedy. Administered in very large doses, and in combination with proper laxatives, it affords more immediate relief than any other remedy with which I am acquainted. Riverius, Sydenham, Huxham, Stoll, and De Haen, speak highly of its powers in this disease. Baglivius thought that the disease was more apt to terminate in paralysis, when opium was given. De Haen, on the contrary, states that, from much experience, he found nothing better calculated to prevent paralysis, than opium administered with large doses of oil. "Sed," says he, "experientia edoctus affirmo ad præcavendam paralysin, opio, cum copioso olio, nihil præstantius dari, potentiusque, propter dolorem sopimentum."* He asserts, what, indeed, has been amply confirmed by the experience of others, that it renders the operation of cathartics more certain by its antispasmodic and soothing effects. "Eo enim contractos, irritatosque nimium nervos, utcunque relaxante, et pacante, purgatio aptius officio fungitur suo."

I have had considerable experience in this disease, and my reliance has been uniformly placed on the exhibition of large doses of calomel and opium in combination, repeated two or three times a day, until the gums were affected by the mercury. In general I have observed that no *permanent* relief is obtained until the calomel affects the general system. The opium, however, is indispensable to mitigate the immediate sufferings of the patient; and when given in a very large dose,—from six to eight grains,—it not unfrequently enables the calomel to open the bowels, especially when assisted by a dose of castor oil. Dr. Luckey, formerly

* Ratio Medendi, tom. i. p. 184.

of Elizabethtown, in this state, has published the result of a very large experience with this article, in the present disease. Foiled by the ordinary modes of practice, he resorted to the use of powerful doses of opium, followed by castor oil, and always with the happiest effects. "I began," says he, "by administering large doses of opium, and generally gave ten grains at a dose, every hour, until ℈ii. were taken. I was exceedingly rejoiced to find that the symptoms now began to yield, and a few common doses of oleum ricini, or the infusion of senna, would produce the desired effect. Of forty cases which occurred in my practice, none, except one, proved fatal after the adoption of this practice."* It may be proper to observe, that these cases occurred in a neighbourhood within the circle of my own practice, while I resided in Lancaster county; and I can therefore bear testimony to the accuracy of the above statement. The prevalence of this disease arose from the country people in the vicinity of Elizabethtown, putting up their *apple-butter* during the fall of 1814, in earthen vessels badly glazed, got from a neighbouring pottery. The acid of the apple-butter, acting upon, and dissolving the glazure of the crocks, (composed of red-lead) converted it into acetate of lead, which being received into the system with the apple-butter, gave rise to this disease. I saw a very considerable number of these cases, and although I depended chiefly on affecting the system with mercury, and therefore gave opium in much smaller doses than those mentioned in the above quotation, yet I believe that upon the whole the Doctor's practice was more promptly successful than my own.

A great deal has of late years been said of the powers of opium in the treatment of mania-a-potu.

* American Medical Recorder, vol. i. p. 503.

That it will frequently procure important advantages in this disease, I am fully persuaded from no very limited experience. As an auxiliary to the emetic treatment of this disease, lately introduced by Dr. Klapp, it is frequently found highly useful. After the operation of one or two emetics, it will, in general, operate very favourably in procuring sleep, an effect which it ought to be our particular object to produce as speedily as possible. If opium be given at all in this disease, it should be administered in large doses, and, unless particular circumstances forbid its further use, repeated until sleep be procured. As I have, however, already spoken pretty fully of the pathology and treatment of this singular variety of mania, under the head of emetics, I shall not pursue the subject any further in this place.

In tetanus, opium has been a good deal employed. From my own experience I can say nothing in its favour. I have, indeed, seen it used in one case, where it seemed to me to have acted perniciously. The patient, who had received very large doses, fell into a profound lethargic stupor, and died, as if by apoplexy. It must be confessed, however, that very respectable authorities may be adduced in favour of the employment of opium in this disease. Dr. Richard Huck speaks in very high terms of large doses of opium in combination with musk, in tetanic affections.* Dr. Stutz, also, has published some interesting facts and observations concerning the employment of opium in spasmodic diseases.† He exhibited a combination of alkali and opium in traumatic tetanus, and, as he declares, with the most extraordinary effect. A similar combination was used with great success by Mr. Bouchet, surgeon

* Medical Observations and Inquiries, vol. iii. p. 331.

† Salzburgische, Medicinisch-Chirurgische Zeitung.

of the Hotel Dieu, at Lyons, in tetanus from wounds. He gave one drachm of opium with three of potass. carbon. in twelve hours. Dr. Morrison, in a recent publication on this disease, states that he has met with more than a dozen cases where the cure could be fairly ascribed to opium. It should, he observes, be given in very large doses, and frequent. The celebrated Dr. Odier, of Geneva, speaking of the treatment of tetanus, observes: "Les anti-spasmodiques les plus actifs et les plus poignans, tels que le musc, l'æther, l'alkali volatil, etc.: n'ont aucune prise sur la maladie. Les seuls que m'aient paru avoir quelque succes sont l'opium et le mercure, mais seulement en tres-grandes doses."* Dr. De la Roche has reported a case of tetanus in a girl of about fourteen years of age, which was cured by large doses of opium and mercury.† What part, however, ought to be ascribed to the opium or the mercury, is impossible to tell. Certain it is, that mercury has cured cases of this disease without opium, and we are, therefore, warranted in ascribing no inconsiderable share to its influence, in these cases.

Odier observes, that the best means for ascertaining whether the disease be tetanus, in a doubtful case, is to exhibit opium in gradually augmented doses. If the disease be tetanus, it will require an exceedingly powerful dose before its peculiar effects are manifested. But in cases which merely similate tetanus, as occurs sometimes in hysteria, this narcotic evinces its powers much more readily and energetically.

Opium has also been used in chorea; and by some its powers as a remedy in this disease have been a good deal extolled. After venesection and the operation of

* Manuel de Médecine Pratique, p. 189.

† Journal de Médecine de M. Roux. The same case is mentioned by Odier, in Bib. Britanu. Sc. et Arts, vol. xxxvii. p. 107 et 111.

purgatives, Sydenham prescribed it as an anodyne in the evening. But it does not appear that he placed any particular dependance on its curative powers in this disease. He prescribed it for its temporary soothing and antispasmodic effects, and depended for a cure chiefly on bleeding and purgatives. Given with this intention, it will, no doubt, be found useful in this, as well as in most other similar affections. When, however, the disease depends on an irritation in the alimentary canal, arising from the presence of irritating sabural matters, which we have reason to believe is frequently the case, opium can only be useful after the bowels have been well evacuated by suitable purgatives.

Very little can be said in favour of the powers of opium in epilepsy. De Haen mentions a case of extreme violence, which was greatly mitigated by the exhibition of opium immediately before the accession of the paroxysm.* It is not unlikely, that where the disease is independent of any organic cause, and connected with great irritability of the system, opium may do good, if it can be so managed as to be given a short time before the paroxysm. Dr. Fothergill says, that in epilepsies that come on from the sudden influence of terror, or those which proceed from violent pain, as is sometimes the case in dysmenorrhœa, opium may be resorted to with much advantage.† It ought never, however, to be employed where there are marks of strong congestion in the vessels of the head; and Richter states expressly that it is wholly inapplicable to congenital cases, or such as depend on a hereditary predisposition.‡

In hysteria, the good effects of opium, as a palliative,

* Epilepsia desperata et horrenda, tentatis frustra quam plurimis, tandem siluit postquam opium ante paroxysmum nervos reddidisset insensiles. Ratio. Med. vol. ii. p. 52.

† Medical Observ. and Inquir. vol. vi. p. 80.

‡ Specielle Therapie, vol. vii. p. 682.

are much less equivocal. During the paroxysm it may often be advantageously exhibited in combination with musk, valerian, æther, the volatile alkali, castor, assafœtida, &c. It is especially indicated where the patient suffers violent pains, as is frequently the case when the disease manifests itself chiefly in the abdominal viscera, or where the convulsions are violent and obstinate.* I recently saw a case attended with exceedingly violent convulsions. Bleeding, emetics, assafœtida, and æther were given in large doses, but all in vain. During the intermission of the convulsions she suffered excruciating pains in the abdomen. After the disease had continued for about six hours unmitigated, it was promptly arrested by an enema containing ten grains of opium. Opium is said to be more efficacious in spasmodic affections when given in union with sal tartari, than when used by itself.†

Whytt recommended opium in hydrophobia. I know of no fact, however, which goes to establish its character as a remedy in this fatal and terrible disease. It appears, indeed, by the experiments of Magendie, that the most powerful narcotics have no perceptible operation either on man or on animals labouring under this disease, whether the substances be received into the stomach or injected into veins. Magendie injected a solution of ten grains of opium into the veins of hydrophobic dogs, without producing any sensible narcotic effect; while a single grain induced eight or ten hours deep sleep in a healthy animal. The same effect was noticed in a hydrophobic man by MM. Dupuytren and Magendie. They injected about eight grains of the gummy extract of opium into the radial vein of a young

* Odier, Manuel de Médicine-pratique, p. 202.

† Bibliothek der Pract. Heilkunde, von C. Hufeland and E. Osann.—June, 1822, p. 331.

man affected with this disease, without any apparent result.*

Opium has been a good deal extolled for its curative virtues in venereal cases, by Michaelis, Saunders, Henry, Cullen, and others. Clement Tode, also, brings forward a number of facts obtained from the celebrated surgeon Sibbernius, which appear to prove the sanative powers of opium in this disease.†

In chronic syphilis, attended with rheumatic pains of the bones and ulcers, opium has often been found useful. According to the statement of Schœpf,‡ it would appear to be particularly beneficial in cases of chancre having a disposition to spread from the glands to the cellular tissue, and assuming a foul and spongy appearance, attended with much pain, and an acrid ichorous discharge. Having, however, never used it myself, in this disease, except to allay irritation and pain, and in union with mercury, I can say nothing from my own experience concerning its virtues as an anti-venereal remedy. Dr. Pearson§ does not regard it as possessed of any specific powers against this disease; he, nevertheless, considers it as an article of no inconsiderable value in the treatment of certain cases of this affection. It diminishes that excessive irritability of the system which sometimes occurs, and which is inimical to the regular operation of mercurial remedies, as well as the sanative effects of the system. In gonorrhœa, where there is much chordee, opium in combination with nitre and camphor, is a very useful remedy. In hernia humoralis, also, opium is often

* Journal de Physiologie Expérimentale, vol. i. No. 1. Jan. 1821.

† Alibert, Mater. Med. &c., vol. ii. p. 86.

‡ T. D. Schœpf von der würkung des Mohnsafts in der lust seuche. Erlangen, 1781.

§ Observations on the Effects of various articles of Materia Medica in the Venereal Disease, by J. Pearson, F. R. S. London, 1805.

indispensable. It not only diminishes the pain, but it seems also to have considerable power in effecting the reduction of the tumefaction and inflammation.

In that species of mortification which occurs in old people, "beginning at the extremity of one or more of the small toes, and passing on, in more or less time, to the foot, ankle, and sometimes to a part of the leg, most commonly destroying the patient," opium is a remedy of very great value. Pott, who first introduced the employment of this substance in the present disease, declares, "that he is perfectly convinced, that by its means, and by its means solely, he had saved lives which, without it, must have been lost." He gave it in the dose of about two grains night and morning. Since the time of this celebrated surgeon, many practitioners have been able to verify the hopes which his account of the effects of this remedy is calculated to inspire. In a case of this kind which came under my care some years ago, I had the most satisfactory proof of its powers. I gave it, however, in much larger doses than those recommended by Mr. Pott. My patient took from six to eight grains in twenty-four hours, given in divided doses at intervals of four hours.

Opium may also be usefully employed in the suppurative stage of inflammation. It sustains the powers of the system, and enables the part to secrete a more perfect pus.

As an antipasmodic and anodyne it is often of essential service in allaying the pain and relaxing the spasm in nephritis calculosa. With a similar intention it is generally resorted to with great advantage during the passage of gall-stones. In such cases the dose should always be large, otherwise the symptoms will be rather aggravated than mitigated by its use.

The sulphate of morphia is a neat and powerful pre-

paration of opium. It is readily dissolved in water, and affords a convenient mode of exhibiting this narcotic, where strong prejudices exist against laudanum and opium. It is now very frequently employed instead of the ordinary forms of opiate remedies, and will in general remain very easily on the stomach. The ordinary dose is one-fourth of a grain, which is equivalent to about one grain of opium.

The acetate of morphia, also, is a very convenient and active preparation of opium, and is by some employed in preference to the sulphate. It is readily dissolved by water, and more sparingly by alcohol. One-fourth of a grain of this preparation is considered equivalent to a grain of good opium.

Formulæ.

ANODYNE LINIMENT.

℞.—Ol. amydalor. ℥ss.
Vilete ovorum No. iii.
Pulv. opii ʒss.—M.

℞.—P. opii ʒss.
— camphoræ ʒi.
Pices alb. ℥ss.
Petrolei q. s.—Ad. consistent. liniment. tenuior.

℞.—Pulv. rad. ipecac.
—— camph. āā gr. ii.
—— opii
Submuriat. hydr. āā gr. i.—M. To be taken at once, on going to bed, in nervous irritation, with functional disorders of the liver and stomach.

℞.—Pulv. nitrat. potass. ʒiss.
—— opii gr. vi.—M. Divide into six equal parts. An excellent opiate, where there is much nervous irritability, with a tendency to febrile irritation.

℞.—Muriat. hydr. gr. 1-4
Aq. rosar. ℥i.
Mucilag. sem. cydon. ʒii.
Tinct. opii ♏ii.—M. A very useful lotion, in subacute ophthalmia.

LACTUCARIUM.

This name has been given to the inspissated juice of lactuca sativa, or common garden lettuce, by the late Dr. Duncan, of Edinburgh. It possesses, in an inferior degree, the soporific and anodyne properties of opium, and may therefore be employed in all cases where this substance is applicable.

The ancients were not unacquainted with the sleep-producing powers of lettuce. Its virtues as such are commemorated by poets and philosophers. "Allusions to this plant," says Dr. Paris, "frequently occur in the medical writings of antiquity; we are told that Galen, in the decline of life, suffered much from morbid vigilance, until he had recourse to eating a lettuce every evening, which cured him. Among the fables of antiquity, we read that after the death of Adonis, Venus threw herself on a bed of lettuces to lull her grief and repress her desires."

All the species of lettuce contain more or less of this narcotic. According to the experiments of Dr. R. Coxe, of this city, the latuca sylvestris contains it in greater abundance than any of the other species of this genus of plants.*

It was at one time supposed that the use of this substance tended to weaken the powers of the genital organs; and that its long continued employment enfeebled the sight.† These suspicions, are, however, totally unfounded.

Dr. Duncan, in a small work on phthisis pulmonalis, published about six years ago, speaks very favourably of the medicinal virtues of this article. It affords, he says, the anodyne effects of the opium, without produc-

* Transact. of Amer. Philos. Soc. 1797.

† Alibert, Elém. de Thérap. vol. ii. p. 98.

ing the disagreeable consequences which not unfrequently follow the employment of opium. Like this latter article, it allays pain and irritation, and produces sleep. I have prescribed the lactucarium in cases that indicated the employment of an anodyne, but it has not appeared to me to possess powers which ought to give it a preference, perhaps, under any circumstances, to the use of opium. Where opium in substance, or its tinctures, cannot be taken on account of idiosyncrasy, it may, in general, if not always, be so combined as to do away its disagreeable effects. Dr. Chapman states, that the dose of this article is the same as that of opium. This is a mistake. It must be given in at least double the dose which we employ of opium, to produce the same effect. Mr. Deyeux has shown that water distilled from this plant possesses very energetic properties, "and which may be employed with much advantage as the base of anodyne potions." He mentions also the case of a lady who was subject to violent nervous spasms, who found no remedy so effectual as lettuce water. This plant, made into a cataplasm, forms an excellent anodyne application.

CAMPHORA.

Camphor is a peculiar vegetable principle, existing always in the state of a concrete. When purified it is white, fragile, somewhat unctuous to the touch, and tenacious when broken between the teeth. Its odour is fragrant, and exceedingly penetrating; its taste bitter, pungent, and aromatic, producing a strong glow of heat in the tongue and palate. It is very volatile, especially in warm weather. When thrown on red-hot iron it burns with a brilliant flame, emitting copious

fumes, which condense in the form of soot. It is soluble in alcohol, but water takes up only about a nine-hundredth part of its weight. Its most perfect menstrua, however, are the concentrated vegetable acids. The mineral acids also dissolve it; and so do the fixed and volatile oils. The nitric acid converts camphor into an acid, distinguished by peculiar properties. When pulverized camphor is added to the solutions of gold, silver, and mercury, these metals become revived. Buillon Lagrange considers this substance as a volatile oil, rendered concrete by the presence of carbon.*

The camphor of commerce is chiefly obtained from the *laurus camphora*, a tree growing in great abundance in Borneo, Ceylon, Java, Japan, &c. That which is brought from Sumatra is the product of the *dryobobans camphora*. Almost all the labiate plants, such as lavender, sage, rosemary, and thyme, contain camphor, and it may be obtained from the roots of sassafras, galangal, zedoara, ginger, cinnamon, cassia, &c. An artificial camphor may be formed by passing the muriatic acid gas through oil of turpentine; "this factitious product, however, is to be distinguished from native camphor in not being soluble in weak nitric acid, and also in not being precipitated by water from its solution in strong nitric acid."†

It is still a disputed point whether camphor should be considered as a diffusible or narcotic stimulus. For my part I am well satisfied that its proper place is among the narcotics. Its action, like that of the most unequivocally narcotic substances, is especially directed upon the sensitive or nervous system. The heart and arteries are but slightly influenced by its operation.

* Alibert, Mat. Med. tom. ii. p. 105.

† Paris's Pharmacologia.

Taken in a moderate dose it exhilirates, and produces a gentle diaphoresis, without materially increasing the force and frequency of the pulse. In very large doses it excites vomiting, tremors, anxiety, syncope, vertigo, insensibility, epilepsy, coma, or morbid wakefulness, and produces a very obvious diminution of the pulse. Dr. Alexander, of Edinburgh, states, that after having taken one scruple of camphor, his pulse became somewhat slower, without experiencing any other sensible effect from the medicine. He afterwards swallowed two scruples, which had the effect of immediately sinking his pulse from seventy-seven to seventy, but which returned to its former frequency at the end of about thirty minutes. A giddiness then came on, which gradually increased until it became entirely insensible. After a short period he was seized with strong efforts to vomit, succeeded by convulsions and transient mania.* I have lately taken several scruple doses of camphor for the purpose of observing its effects on the circulation, and found that the pulse, though slightly increased in fulness, was not in the least increased in frequency. I experienced some giddiness and a sensation of fulness in the vessels of the head. Alibert observes: "the greater part of the phenomena that have hitherto been noticed as to the effects of camphor, either in animals or in the human system, appear to correspond with those which result from the action of opium. Like opium, its action is promptly directed to the brain and the whole nervous system. This remedy seems to possess the power of at once producing a torpor of this organ, and of increasing the irritability of the muscular fibre. This difference, however, has been remarked between the action of opium and camphor; opium begins by irritating, and afterwards induces torpor and

* Philosophical Transactions, vol. lvii. part 1.

insensibility: camphor, on the contrary, first produces a languor in the system, and to this languor succeeds a violent excitement in all the organs of the animal economy."*

Camphor admits of a great variety of remediate applications. In the treatment of typhus fevers it has been particularly recommended by the French and German physicians, and it is, indeed, a medicine of very considerable utility in diseases of this kind. In the latter stage of typhus, when the pulse is small, the skin dry and hot, and delirium, wakefulness, subsultus, and other symptoms of nervous irritation exist, camphor will often produce great benefit. Hildibrand speaks in the most favourable terms of the employment of camphor in the advanced stage of this disease (*On Contagious Typhus*, p. 209), and Richter declares, that his experience with this remedy, in a great many instances, has led him to regard it as one of the most valuable remedial means we possess in the latter period of this malady. (*Specielle Arzneimittellehre*, vol. iii. p. 368.) Its power of allaying the delirium and other nervous symptoms of typhus, is, I think, more decisive than that of any other remedy we possess. I have seldom omitted to prescribe it when these symptoms were present, and I have often had occasion to be pleased with its effects. Burdach says, that in typhus accompanied with inflammation of the lungs, liver, or bowels, camphor in union with tartar emetic, nitre, or calomel, may be employed with great advantage. In the pneumonia typhoides, I have known it to be employed with small doses of opium and rad. serpentaria, with decided benefit.

In the treatment of puerperal fever, camphor has been recommended as a remedy of great usefulness. In

* Alibert, Mat. Med. tom. ii. p. 106.

this disease, however, its powers are but little to be depended on. In the early stage camphor would be hurtful, and in the latter inadequate. It cannot be too much impressed on the minds of practitioners, that copious and prompt depletion, conjoined with cathartics, and used within the first twelve, or at furthest twenty-four hours, are the only means we possess upon which any reliance ought to be placed, for arresting the fatal progress of this disease. After its inflammatory symptoms have been subdued, and much prostration exists, camphor may be used with advantage. In such cases it is best given in union with opium.

In bilious fevers, camphor may often be used with very good effects. Callisen has published an account of an epidemic bilious fever, in which this remedy, given in very large doses, was attended with remarkable success. He says that it was administered in doses of half a drachm every three or four hours, and almost always with the effect of rendering the respiration more easy, the pulse better, and the skin moist and comfortable.* In the latter periods of the more violent forms of this disease, such doses may, perhaps, be necessary; but in the milder cases of our bilious remittents, it would undoubtedly be hazardous to employ the remedy to this extent. After the alimentary canal has been well evacuated of its contents, if the skin remain hot and dry, with a full and frequent, but compressible pulse, small doses of camphor, in union with nitre and tartarized antimony, are an exceedingly useful remedy.†

Barthez states, that he employed camphor in union with nitre, with excellent effects, in intermittent fevers

* Alibert, Mat. Med. tom. ii. p. 108. Callisen, dans le premier volume des Mémoires de la Société Royale de Copenhague.

† Pulv. nitri. ʒi. pulv. camphoræ gr. xvi. tart. antimon. gr. i. M. in chartulas viii. divid. One of these to be taken every two or three hours.

accompanied with nervous symptoms. In the exanthematous fevers, where, from deficiency of excitement, the eruption appears imperfectly, or where it has been repelled, camphor is a useful remedy. It is said to be particularly beneficial in cases of this kind when the urinary passages are affected, and the urine is pale and watery, accompanied with a sensation of distention and pain in the lumbar region.

Richter says, that camphor is an excellent remedy in cynanche parotidea,—and that it is especially useful for preventing metastasis, or for obviating its evil consequences. This article has also been found very benefical in the advanced stage of scarlatina maligna, or putrid sore throat.

This remedy may also be given in rheumatic affections with much advantage. It is especially useful in this disease when the skin is dry and hard, and may be very efficaciously exhibited in union with spiritus mindereri, opium or antimonials. In chronic rheumatism I have given it in conjunction with sulphur, tartarized antimony, and gum guaiac. with decided benefit. Tourtuel speaks highly of a solution of one part of camphor in eight parts of sulphuric æther, together with two parts of cajeput oil, as an external remedy in rheumatic affections.*

In the treatment of chronic catarrh, camphor in union with minute portions of opium, and the nitrate of potass, often affords very material relief. In catarrhal affections Kotrum (Hufeland's Jour. B. iii. p. 48) strongly recommends the use of camphor in conjunction with muriate of ammonia and tart. emetic. I have used this combination in acute bronchitis, after proper depletion, with decided benefit. Two grains of camphor with ten grains of the muriat. ammon. and about

* Burdach.

one-eighth of a grain of tart. antim. may be given every two hours.

When, after free depletion, and other direct antiphlogistic measures in pleurisy, a troublesome cough remains, with oppressed respiration and pain in the chest, great benefit may in general be derived from the use of a mixture of camphor, ipecacuanha, and opium. Richter declares, that in this state of the disease he has often derived unequivocal advantage from this combination.

In the treatment of spasmodic and convulsive affections, camphor has been much recommended by the German and French physicians. In epilepsy it is stated to have been given with complete success. Cullen says he found it useful in this disease. "I have not, indeed," says he, "known an epilepsy entirely cured by camphor alone: but I have had several instances of a paroxysm, which was expected in the course of a night, prevented by a dose of camphor exhibited at bed time; and even this when the camphor was alone; but it has been especially useful when given with a dose of cuprum ammoniacum, of white vitriol, or of the flowers of zinc."* Richter observes, that camphor is of no service in the ordinary cases of epilepsy, continued from habit; but where it depends on a suppressed cutaneous eruption, or on onanism, or where it is connected with unusual venereal desires, he considers it a remedy of great utility.† It is also much recommended in those cases of epilepsy which come on about the age of puberty, and which are attended by considerable disturbance of the mind.‡

In mania camphor was formerly very often pre-

* Cullen's Mat. Med. vol. ii. p. 213.
† Richter's Specielle Therapie, vol. vii. p. 681.
‡ Locher's Observat. Practic. p. 42.

scribed; and many cases are on record of its having been successfully given.* The late professor Barton, in a note to Cullen's Materia Medica, says: "I have certainly employed camphor with advantage in some cases of mania. In one case which occurred under my care in the Pennsylvania Hospital, it effected a complete cure." Dr. Gooch thinks camphor with hyoscyamus, the best soporific with which we are acquainted in mania and melancholia. He gives ten grains of each at bed time, after the use of the tepid bath.†

Camphor has also been used with success in the cure of chorea. Pitt employed it with benefit in union with valerian and the cold bath;‡ and Wilson reports a case in which he gave it in conjunction with assafœtida, with perfect success. He carried the dose to the extent of eighteen grains of the camphor four times a day.§ Richter states, that when the disease appears as the effect of cold, and is attended with a dry and harsh skin, great debility, and a pale relaxed appearance, and especially where there is an irritatio seminalis, camphor is peculiarly advantageous.‖

In eclampsia, or puerperal convulsions, camphor has been recommended by some writers. Where the disease occurs in hysterical females, and the countenance remains pale, with a corded and irritated pulse, important advantages may, no doubt, be gained from this remedy. In patients, however, of a full habit of body, and where the convulsions are attended with a powerful determination to the vessels of the head, it ought not to be resorted to. In cases of this kind our chief dependence must be placed on the free use of the lancet.

* Philosophical Transactions, vol. xxxv.

† Transact. Lond. College of Physicians, vol. vi. for 1820.

‡ Abhandlungen. f. Pract. Aerzte. b. v. st. 2, p. 218.

§ Medical Commentaries of Edinburgh, vol. ii. p. 463.

‖ Specielle Therapie, vol. vii. p. 764.

Richter says, where there is much congestion in the vessels of the brain, very copious and repeated bleeding, both topical and general, is indispensable.* Dr. Dewees, too, places his principal reliance on venesection. The reader is referred to his essay on this subject, published in the second volume of the American Medical Recorder, for a full and satisfactory exposition of the utility of blood-letting in this disease.

Richter says that camphor is one of our most valuable remedies, for counteracting or removing the evil effects which sometimes result from the repercussion of chronic cutaneous eruptions. In certain varieties of dropsy, also, this article has been found very useful. In dropsies succeeding scarlatina, when the pulse is free from tension, camphor administered in union with the nitrate of potash, will often do much good. In general, whenever the production of the disease is connected with suppressed perspiration from the influence of cold, camphor, in conjunction with nitre, or ipecacuanha, is calculated to afford considerable advantage. In cases of this kind Bracht (Hufeland's Jour. v. 48, p. 33) administered the camphor in union with calomel, and the golden sulphur of antimony, with marked success. Richter, also, employed camphor in union with calomel, in cases of anasarca after scarlatina, with the happiest effect. (Speciel. Arzneimittellehre, B. iii. p. 383.)

In amaurosis, connected with a leucophlegmatic habit of body, camphor, given in doses gradually increased from a few grains to one scruple, three or four times a day, has been employed with complete success.† Arnemann (Magazin. B. i. p. 98) states, that he has in several cases of this kind, restored the sight by the internal employment of camphor. He gave two grains

* Specielle Therapie, vol. vii. p. 543.

† Burdach's Mat. Med. vol. ii. p. 397.

of it, in conjunction with twenty grains of valerian, twice daily, and gradually increased the dose of camphor, until it gave rise to considerable vertigo. Flemming, also, (Hufeland's Jour. v. 32, p. 107) cured a case of amaurosis, in a person of a phlegmatic temperament, and enfeebled habit of body, by the use of camphor in conjunction with the extract of arnica. The dose of each was, at first, two grains, both of which were gradually increased to one drachm.

This article has been much recommended for the purpose of relieving strangury from cantharides and other causes. I have myself derived unequivocal advantages from its use in such cases. There are many, however, who deny its powers in this respect. It appears to possess a tendency to lessen the excitement of the genital organs. Of this fact I have had very decided evidence. Several years ago I was consulted by an elderly married man, of rigid moral habits. He informed me that he suffered very much from painful erections, and an incessant propensity to venery. He was naturally of a gloomy disposition, which was much increased by his complaint. I ordered him camphor, in two-grain doses, to be taken three times a day. In a week he returned and told me he was almost entirely relieved; and by a further continuance with the remedy, he was completely rid of his tormenting complaint.

Müller (Hufeland's Jour. B. 14, p. 99) relates the case of a clergyman, who, for a long time, was extremely tormented with incessant priapism, and almost irresistible venereal desires. Camphor was prescribed in full doses, which, in the course of some weeks, had the effect of entirely subduing the disease. Richter, also, has given an account of a similar case of great violence and obstinacy, which was ultimately cured by the employment of camphor.

In consequence of its powers, in this respect, camphor has been strongly recommended for the cure of nymphomania, and a considerable number of instances have been reported of its successful use in this distressing malady. Alibert states, that he placed very little confidence in its powers in this respect, until he observed its effects in a female, who was suffering under symptoms of furor uterinus, with occasional manifestations of mental derangement. The students of the Hospital St. Louis gave her one drachm of camphor. She experienced no inconvenience from it. But her excessive venereal desires were entirely allayed. These, however, returned, but were always removed by the camphor. At last the medicine brought on a great disposition to syncope, vertigo, and excessive pain in the head, which obliged the patient to lay aside its use.*

Camphor is also an excellent palliative remedy in painful menstruation. I have frequently given it in cases of this kind, and generally with much advantage.

Dr. Bodtcher, a Danish physician, has lately published some interesting observations on the employment of the vapour of camphor as a remedy in various diseases. He found it particularly useful in the complaints affecting the cavities of the nose, the throat, and the chest. In cases of complete stoppage of the nose, commonly called snuffles, a piece of camphor kept before it is said to afford complete relief in a few minutes. Dr. Bodtcher also found it very useful in cynanche, when held before the nose or the open mouth. The vapour of camphor has likewise been employed in spasmodic coughs, with great benefit.†

Dr. Maury asserts, that camphorated liniment is a most excellent remedy for the cure of itch. He em-

* Alibert, Mat. Med. vol. ii. p. 109.

† American Medical Recorder, vol. v. p. 578.

ploys the liniment of Vareby, composed of two ounces of oil of almonds, triturated with two drachms of camphor. This is to be rubbed in on the forearms, and inner surface of the thighs, twice daily. It is seldom necessary to continue its use for more than fourteen days to effect a complete cure. (*Reports Hospital of St. Louis.*)

Camphor may be given either in the form of powder, emulsion, or solution. By adding a few drops of alcohol to it, it may be readily pulverized. Its solubility is much increased by triturating it with carbonate of magnesia, and hence it is best given in this way when employed in substance. The mixture is, however, much the most agreeable form for exhibiting this remedy. The dose of camphor is from two grains to one scruple.

Formulæ.

℞.—Pulv. camphoræ gr. xxiv.
Submuriat. hydrarg. gr. xxxvi.
Sulphat. morphiæ gr. ii.
Conserv. rosæ q. s.—M. Divide into twelve pills. One to be taken every hour or two hours in cholera, or violent and painful diarrhœa.

℞.—Pulv. camphoræ ʒss.
Pulv. nitrat. potassæ ʒi.—M. ft. Divide into six equal parts. One to be taken every hour as a palliative in dysmenorrhœa, or for allaying after-pains.

℞.—Pulv. camphoræ ʒi.
Pulv. g. arab. ʒii.
Sacch. albi. ℥ss.
Aq. fontanæ ℥viii.
Spir. nit. dulc. ʒiii.—M. Dose, a table-spoonful every three or four hours in typhoid fevers, attended with delirium.

℞.—G. camphor. ℈iii. solve in
Æther sulph. ℥i. adde
Tinct. opii. ʒii.—M. Dose, from thirty to forty drops, to allay excessive vomiting, when unattended with fever; and as an antispasmodic in hysteria.

HUMULUS LUPULUS.—THE HOP.

I HAVE already spoken of this plant, when treating of tonics. It remains, therefore, in this place, only to

notice its narcotic powers—powers which it possesses to a very considerable degree, "and capable of producing all the phenomena of opium." The flowers are the only parts used in medicine, although the leaves are not without some anodyne properties. A pillow of hops is a very common mode of procuring sleep, in domestic practice. The narcotic principle of the hop seems to be particularly applicable to those cases where want of sleep and restlessness are kept up by an irritable state of the nervous system, and where opium cannot be taken from idiosyncrasy. It may be given in the form of an extract or of tincture. The tincture is made by infusing five ounces of hops in two pounds of proof spirits. The dose of this is from one drachm to half an ounce. The extract is given in the dose of from ten grains to two scruples, pro re nata.

The active powers of the hop reside almost exclusively in a peculiar pulverulent substance found between the scales of the hop. To this substance the name of *lupulin* has been given by Dr. A. W. Ives of New York. Lupulin has the peculiar odour and taste of hops, and is of a yellowish colour. It is composed of resin, a bitter principle, tannin, extractive, a volatile oil, wax, and lignin. The resinous portion is by far the most abundant component part. According to M. Chevallier, two hundred parts of lupulin contain one hundred and five parts of resin. It is supposed, however, that the medicinal powers of this substance (lupulin) reside in its volatile oil and bitter principle. The dose is from eight to sixteen grains. I have repeatedly resorted to the use of lupulin, as an anodyne and soporific, and generally with excellent effects. It is peculiarly useful in certain irritable and nervous states of the system, where opium cannot be employed on account of its disagreeable effects. In chronic hysteria, attended with morbid vigilance and painful

sensations in the abdomen, I have known the lupulin, administered in ten grain doses every six hours, to procure great relief, without causing any unpleasant feelings whatever.

HYOSCYAMUS NIGER.—HENBANE.

This plant is every where found in abundance on the continent of Europe. Its root bears a considerable resemblance to that of the parsnip, and fatal mistakes have happened by taking the former root for the latter. The taste of this plant is nauseous and slightly acrid, and its odour, which is almost wholly lost on exsiccation, stupifying. It contains resin, mucilage, extractive matter, gallic acid, some salts, and, according to some chemists, an alkaline element, which has received the name of *hyocyama*.*

Both alcohol and water extract the narcotic powers of hyoscyamus very freely; boiling water, however, destroys them. The best menstruum is diluted alcohol.

The whole plant acts as a poison on the human system; but sheep, deer, and some other animals eat it with impunity.

Taken in a very large dose, it occasions a hard, small, and irregular pulse; anxiety, headache, vertigo, diminution of sensibility, intoxication, a sensation of falling downwards, even when in a recumbent position, delirium, coma, apoplexy, double vision, or entire loss of sight, subsultus, tendinum, convulsions, risus sardonicus, paralysis of the tongue, a blue colour of the face and whole body.† Alibert states that a gangrenous eruption on the skin, particularly of the lower extremities, is sometimes a consequence of a very large dose

* Paris's Pharmacologia.

† Burdach, Arzneimittellehre, B. iii. s. 525.

of this substance. Orfila says, that two persons who had eat some young shoots of hyoscyamus dressed with oil, were, according to the report of Mr. Choquet, affected in the following manner: dilatation of the pupils, difficulty of breathing, pulse small and intermitting, aphonia, trismus, risus sardonicus, loss of sense, which, connected with a strong propensity to sleep, exhibited a complete state of typhomania. The extremities became cold; the superior ones were agitated; the inferior paralysed;* and to these symptoms were added a deep carphologia.

In its remediate properties it approaches a good deal to those of opium. It differs, however, from this substance in heating the system much less, and in acting as an aperient on the bowels. It may, therefore, be employed with advantage where we wish to allay pain and irritation, and where opium is inadmissible on account of its stimulating and constipating properties.

Storck, Mayerne, Greeding, and others, regarded it as possessing very considerable curative powers in epilepsies, convulsions, and other spasmodic affections. Later experience, however, does not confirm these favourable sentiments of its virtues.

It is highly recommended by Bree as an antispasmodic in some cases of asthma.† In union with camphor, Dr. Gooch recommends the extract of hyoscyamus, in the dose of ten grains each, as one of the most useful anodynes in mania and melancholia;‡ and

* Toxicology, p. 256.

† His formula is this:

℞.—Tinct. scillæ	gtt. x.
Acidi nitrici.	gtt. vi.
Extract. hyscyam.	gr. iii.
Aq. fontanæ	℥iss.

Misce. Fiat haustus, horis tertiis vel quartis durante paroxysmo repetendus.

‡ Observations on Puerperal Insanity. In the sixth volume of the Trans. of Lond. College of Physicians. 1820.

Richter states, that he succeeded in curing an obstinate case of this disease, after many other remedies had been tried ineffectually. He gradually increased the dose until the quantity of the extract taken, in twenty-four hours, amounted to one drachm. Hyoscyamus has also been employed in hooping-cough. Armstrong, Lentin, Butter, and Fleisch (Kinderkraukeiten, B. 2, p. 431) administered it to infants for this purpose, with very evident advantage. Rodemacher strongly recommends this narcotic as a remedy for spasmodic colic; and Stoll asserts, that even in colica pictonum, it is capable of procuring great relief when given in large doses. (Mohrenheim's Contributions to Pract. Med. vol. i. p. 87.)

In hæmoptisis, attended with great irritability of the system, and a violent spasmodic cough, olive oil, in which a certain portion of hyoscyamus has been boiled, is recommended by Richter* and others, as a very efficacious remedy. Borda speaks strongly in favour of the virtues of this article in spasmodic and inflammatory coughs, whether the result of protracted peripneumony or arising from nervous irritability.†

In tic doloureux, hyoscyamus niger, in combination with valerian and the sublimed oxide of zinc, has been greatly praised. It was used, as we are informed, with much success by Dr. Meglin, of Colmar, in France. Hufeland, also, speaks favourably of its powers in this

* Richter gives this formula:—

℞.—Ol. hyoscyam. coct. ℥ss.
G. mimos. ʒvi.
Syrup. althæ. ℥i.
Misce intem. et affund. sensin.
Aq. cerasor. nigr. ℥vi.
M. S. a table-spoonful every hour.

Richter's Specielle Therapie, vol. ii. p. 296. Harles, in Hufeland's Journal der Pract. Heilkund, vol. ix. No. 2, p. 56.

† Primæ Linæ of S. Borda.

painful affection. Breiting, also, has published cases illustrative of the good effects of this article in neuralgia. He administered in very large doses, together with small portions of calomel. In chronic hysteria, particularly in cases attended with nervous pains, and a full and active pulse, very important benefit may often be derived from this remedy. Joerdens (Hufeland's Jour. Vol. 27, p. 130) found it particularly beneficial in case of hysteria, or great nervous irritability, attended with morbid vigilance.

I have known very decided benefit to result from the use of large doses of hyoscyamus in conjunction with camphor in mania-a-potu. I have given fifteen grains of the extract, with six grains of camphor every two hours, in cases attended with a moderate grade of arterial reaction, with much advantage.

The leaves form an excellent anodyne cataplasm, and the smoke from its seeds, when applied by a funnel to a carious tooth, is recommended in severe fits of odontalgia.*

The infusion of the leaves is frequently employed by the Germans as an enema, in spasmodic colic, painful hæmorrhoidal tumors in the rectum, ulcers of the rectum, spasmodic retention of urine, painful enlargement of the prostrate gland, dysuria, and dysmenorrhœa. This narcotic is, moreover, often used for the purpose of dilating the pupils.

Cullen thinks that this substance is more apt to produce delirium than opium. This accords with my own experience. I once prescribed the extract to an extremely nervous female; the first dose, which amounted only to one grain, produced the most perfect delirium. In another case I observed similar effects, though much less powerful. This article is employed, either in the

* Paris's Pharmacologia.

form of tincture or extract. The extract is given from gr. ss. to as much as the patient will bear. The tincture, made in the proportion of ℥ii. ʒii. of the dried leaves of the plant, to lb. i. of proof spirit, may be taken in the dose of gtt. to ʒi.

The active properties of hyoscyamus, vary very much at different periods of its growth. The leaves should be collected soon after the flowers have withered, or rather about the time they are withering. Those of the second year are said to be much superior, in efficacy, to those of the first.

Formulæ.

℞.—Aq. fœnical. ℥iss.
Magnes. albi ʒi.
Nitrat. potass. ʒss.
Extract. hyoscyam gr. ii.
Syrup zingiber ℥i.—M. S. Dose, a tea-spoonful every three hours for an infant. Hufeland strongly recommends this mixture, in the convulsions of children from intestinal irritation.

℞.—Nitrat. potassæ gr. x.
Pulv. cort. cinnamon gr. vi.
Extract. hyoscyam. gr. ii.
Pulv. ipecac. gr. ss.—M. S. This to be taken every two or three hours. Jahn employed it with much success in hæmoptisis, attended with quick and contracted pulse.

℞.—Extract. hyoscyam.
Flor. zinci āā ʒss.
Magnes. carbonat. ʒiss.—M. From six to ten grains of this are to be taken two or three times daily, in chronic hysteria.

℞.—Extract. colocynth ℈ii.
——— hyoscyam. ℈i.—M. f. pil. No. xii. Brande recommends one pill to be taken at night, in habitual costiveness.

CONIUM MACULATUM.—HEMLOCK.

This is a very ancient article of the materia medica. The extract of cicuta is mentioned by Dioscorides, as "multiplicis in medicina usus." It does not appear, however, that it was used internally either by the Greek or Roman physicians. As an external application it was employed in phagedenic and other ill-conditioned

ulcers; but its introduction into practice as an internal remedy did not take place until near the middle of the eighteenth century.

"There is no instance," says Dr. Cullen, "in which the fallacy of experience appears more strongly than in the history of this article. Storck, speaking from his own experience, alleged that it is the most efficacious remedy we possess for the cure of various glandular diseases.* Dr. Cullen, however, and since his time, physicians in general, have not found it to answer the high expectations which the experiments of Storck were calculated to excite. Still it must be confessed that it is an article of strong powers, and capable, under certain circumstances, in a variety of diseases, of doing a great deal of good. Even Cullen admitted its occasional valuable effects. "We have known it," says he, "useful in healing ulcers, which had come upon scirrhous tumours, and which continued to be surrounded with such scirrhosity; and in some ulcers certainly that approached to the nature of cancer. Even in cases that might certainly be considered as truly cancerons, I am so far from being of the opinion of Bierken, of its rather aggravating the disease, that I have found it in several cases to relieve the pains, and mend the quality of the matter proceeding from the sore, and even to make a considerable approach towards healing it; though I must own I never was concerned in a cancerous case in which the cure of the sore was completed."† Dr. Chapman‡ is, therefore, wrong in asserting that "its utility has been denounced by Cullen." He gave

* Ant de Storck Libellus, quo demonstratur cicutam non solum usu interno tutissime exhiberi, sed esse remedium valde utile in multis morbis. Vindobon. 1760, 8vo. Ejusdem Libelus secundus, 1761. Ejud Supplement: necessarium de cituta, 1761. Cum tabulis 8.

† Cullen's Mat. Med. vol. ii. p. 189.

‡ Elements of Therapeutics, vol. ii. p. 239, first edition.

it all the credit which can be conceded to it at the present day. He, however, justly regarded the praises of Storck as extravagant; a judgment which is fully confirmed by general experience.

The leaves of this plant possess a strong narcotic odour, and are slightly bitter and nauseous to the taste. Exsiccation destroys their acrid quality, without lessening, in the least, their narcotic principle. Water distilled from the leaves, acquires the peculiar odour and taste of the plant, but is almost entirely destitute of narcotic virtues. The decoction is nearly tasteless, "and the extract resulting from it by evaporation" acts but very feebly on the system. Alcohol and ether extract the narcotic properties of the leaves readily and completely. The ethereal extract is of a fine dark green colour, possessing the taste and smell of the plant, and is so active that half a grain of it will generally produce headache and vertigo. "Dr. Paris has prematurely proposed for this extract the name of *concin*, as it has no claim to be considered the active principle, which is only one of its ingredients."—(U. S. Dispensatory.) Hemlock has yet not been satisfactorily analyzed. According to Schrœder, the leaves contain resin, extractive, gum, albumen, a green fecula, and various salts. Brande obtained, besides the ingredients just mentioned, an oil possessing a very strong odour, and a peculiar alkaline principle, of a nauseous taste and strong narcotic smell. This substance is insoluble in water, and is so active in its narcotic powers, as to occasion intense headache and vertigo, in half grain doses. The names of *cicutin* and *conia* have been given to this principle, though the latter term is now most commonly employed.*

* The conia is obtained by digesting the plant for three or four days, in alcohol, filtering and evaporating the tincture, treating this extract with

When taken in a moderate dose, it produces no sensible effects, except vertigo and slight pain of the head. Taken, however, in a very large quantity, its effects are of the most violent kind. Anxiety about the præcordia is first felt; this is immediately followed by vertigo, great pain of the stomach, convulsions, discharge of blood from the mouth and ears, loss of sense, and trismus. The effects of an ordinary dose of this narcotic generally commence in thirty minutes after its reception into the stomach, and continue usually about twenty-four hours.

As a remediate article, cicuta admits of pretty extensive application. It appears, however, to be now almost universally admitted, that very little if any advantage can be expected from it in the treatment of genuine cancer. Alibert* states, that of more than one hundred women affected with scirrhous cancer of the uterus and other parts of the body, who were treated with this remedy, in the Hospital Saint Louis, not one received the least benefit. In glandular indurations of a scrofulous character, however, this narcotic has frequently afforded very decided benefit.

In chronic intumescence of the uterus, cicuta has been found very beneficial. Recamier (Gazette de Sante (1825) No. 42) gives an account of a case of this kind, which was successfully treated with this remedy, in conjunction with a spare and simple diet. Wenzel also employed the cicuta with decided advantage in enlarged uterus, attended with occasional transient pains in the pelvis. (Wenzel on Diseases of the Uterus, 1816.) In union with small portions of tart.

water, then adding magnesia, alumina, or oxide of iron, and evaporating the whole to dryness. This residue is to be submitted to the action of a mixture of ether and alcohol. The solution thus obtained yields the *conia* by evaporation.

* Elémens de Therapéutique, vol. i. p. 412.

antimony, or of the muriate of mercury, cicuta has been used with excellent effects in chronic enlargement of the spleen, or of the pancreas. Dufresnoy states, that he has employed this remedy in cases of dropsy from enlargement of the spleen or liver, with very great benefit. In scrofulous ulcers, also, cicuta is a remedy of value; and when united with minute doses of muriate of mercury, it forms an exceedingly useful medicine in almost every species of old and obstinate ulcer.*

Dr. Percival has published some interesting cases of the good effects of hemlock in internal ulcerations.† Dr. Odier, of Geneva, also gives an account of a most distressing instance of obstinate ulceration in the œsophagus effectually cured by this remedy. His patient commenced with a small dose, and gradually increased it to the extent of eighty grains a day.‡ Dr. Rutty, in a letter to Dr. J. Fothergill, gives the result of a large experience with this article, in the treatment of scrofulous and other malignant and corrosive ulcers; and it appears from this statement, that it is a remedy from which we may frequently expect important advantages in such cases.§ Dr. J. Fothergill also states, that he has often used it with success in sanious ulcers with gleety and painful discharges of the vagina.‖

It is a medicine of very considerable powers in allaying morbid irritability. As a palliative for quieting pulmonary irritation, Dr. Paris considers it by far the most efficacious remedy we possess. Although my own experience does not allow me to speak so favourably of its virtues in this way, yet I have witnessed in

* Gataker. Essays on Medical subjects, with an Introduction relating to the Use of Hemlock and Corrosive Sublimate, &c. in Cancerous Disorders. Lond. 1764.

† Bibl. Brit. Sc. et Arts vol. xxxviii. p. 58.

‡ Manual de Médecine Pratique, p. 60, in a foot note.

§ Med. Observ. and Inquir. vol. iii. p. 229. ‖ Ibid. vol. iii. 418.

several instances its soothing effects in troublesome coughs. Dr. Donald Monro states, that a deeply consumptive young lady took six grains of the extract of hemlock every night on going to bed, and that it always procured her rest, without heating her, or producing the uneasiness invariably felt from the use of opium. In chronic bronchitis, attended with a copious purulent expectoration, I have derived signal advantage from the employment of the extract of cicuta in conjunction with the acetate of lead. Two grains of the former, with a grain of the latter, may be given twice or thrice daily.

In phthisis pulmonalis, hemlock has, indeed, been particularly recommended as a palliative by many eminent writers. Richter declares that, both in the early and advanced stages of the disease, he has derived unequivocal benefit from the employment of this narcotic. It is said to be particularly useful when the expectoration is fœtid, thin, or of an ichorous character. Adair, also, speaks very favourably of the effects of this remedy as a palliative in this disease; and Hufeland (Jour. B. 58, p. 89) states, that he has known it to afford marked relief in cases of this kind. He commenced by giving five grains of the extract three times daily, and gradually increased the dose until it caused considerable vertigo, nausea, and tremor of the extremities. "No other remedy," he says, "excels this narcotic in allaying pulmonary irritability and irritation." It should, however, be given in very large doses when used for this purpose. He recommends the following mixture.*

Cicuta has also been found serviceable in syphilis.

* ℞.—Ext. cicut. Ext. hyosyam, āā ℈ii. Mucilag. G. arab. ʒii. Tere simul. et adde: Lig. ammon. acetat. ℥i. Aq. fontan. ℥iv. Vin. ipecac. ʒi. Syrup, ℥ss.—M. ft. Dose, a table-spoonful three times daily.

Hunter recommends it combined with mercury in indolent buboes and swelled testicle. In syphiloid chancres, of an irritable and spreading character, cicuta, given in very large doses, will often do much good. In an extremely troublesome case of this kind I have lately obtained prompt and effectual relief from exhibiting this substance with the nitrate of silver. For many years past, I have very seldom treated a case of syphilis without employing this narcotic. My usual mode of prescribing it is in union with corrosive sublimate, in the proportion of two grains of the extract with one-eighth of a grain of the mercurial. This dose is to be taken three times daily. In old syphilitic ulcers and cutaneous eruptions, I have employed this combination with more satisfaction than other remedy I have used.

Narcotics were formerly much resorted to in the treatment of insanity. It seems, however, to be pretty generally admitted at the present day, that they can afford but little benefit in the diseases of the mind. Examples, however, do occasionally occur, of the beneficial operation of this class of remedies in mental diseases. The records of medicine, too, furnish us with proofs of their occasional efficacy in such affections; and we are, therefore, not permitted to regard them as entirely useless in this respect. Dr. Anthony Fothergill, of Bath, has recorded several instances of the successful employment of cicuta in the treatment of insanity.

I have employed it a good deal in the treatment of chronic rheumatism, and I am satisfied, that, if given in strong doses, it will often afford useful results. It is, however, much inferior, in this respect, to stramonium, of which I shall presently give an account.

Cicuta has also been resorted to with success in tic

doloureux. Dr. Fothergill* speaks well of its efficacy in this disease. Dr. Jackson, of Boston, has also published cases in which the good effects of this article are strikingly illustrated.† Thilemus gave cicuta in full doses, together with the volatile tincture of guaiacum, in a case of neuralgia of the face, with prompt and entire success; and Jahn (Mat. Med. Vol. 1, p. 592) administered it in conjunction with gum guaiac, assafœtida, and calomel, with an equally favourable result. We have also the testimony of Pugol, Jackson, Gessner, Hufeland, Masius, and Siebold, in favour of the occasional efficacy of this narcotic in neuralgic affections.

Dr. Butler‡ has strongly recommended this medicine in the treatment of hooping-cough. His extravagant praises of this article have, however, never been confirmed by other practitioners. I have used it very frequently, but never with any decided advantage. Belladonna is so greatly superior to the cicuta, in this disease, that it deserves a preference, perhaps, in all instances where a narcotic is wanted.

The cicuta has also been employed in asthma; but it does not appear that it deserves any attention for its remediate powers in this disease. The same may be said of its use in epilepsy, chorea, and hysteria. In chronic cutaneous eruptions, particularly in herpetic and leprous affections, decided relief has been obtained from the employment of this narcotic. Gessner used an infusion of the leaves, as a topical application, with entire success in a case of inveterate itch. (Med. Beobachtungen, p. 204). Strune states, that in conjunc-

* London Medical Observations and Inquiries, vol. v.

† New England Medical Journal, vol. ii. No 2.

‡ A Treatise on Kinkcough, with an Appendix on Hemlock, by Wm. Butler, M. D. Lond. 1775.

tion with great abstemiousness in diet, or what the Germans call *hunger-cure*, he has administered the cicuta in obstinate and long standing cases of herpetic eruptions with the happiest result. Stuive also resorted to this mode of treatment with complete success, in a case of inveterate leprous psora.

In the cure of jaundice the powers of this article seem to be better established. Dr. J. Fisher, of Beverly, Massachusetts, has found it an exceedingly successful remedy in that variety of this disease which is occasioned by a spasmodic contraction of the biliary ducts. Drs. Bigelow and Jackson, of Boston, give their testimony in favour of this article in the cure of this disease. "When the dose is gradually increased until its effects are distinctly felt in the head and stomach, the yellowness of the skin and eyes, in most cases, begins to disappear by the second day, and the disease is soon removed."*

Gudet (Jour. de Med. vol. xii.) asserts that cicuta possesses the power of greatly diminishing the secretion of milk; and Richter recommends its use where this secretion is too copious, or during weaning.

In whatever disease this remedy be given, it ought to be used in large doses. Dr. Fothergill has published some excellent observations on this subject. He observes, that its efficacy will always depend on its being given in as large a dose as the patient can bear. It should be given in sufficient doses to produce some obvious effect on the system.

Vertigo seems to me the most certain mark by which to judge of the necessary influence of the medicine; and it is probable that we can never derive any decided advantage from its use, unless we give it to the extent of producing this effect.

* Thacher's Dispensatory, p. 196.

Not a little of the contradictory experience which has been published with regard to the remediate powers of this article, may, perhaps, be ascribed to the great diversity which it exhibits in its strength as it is found in the shops. M. Orfila instituted a set of experiments with a view of ascertaining the comparative strength of the extract of hemlock properly prepared, and that which is usually sold in the shops. A drachm of this article prepared by himself was sufficient to poison a dog, whereas it required an ounce and ten drachms of that obtained from the shops to produce the same effect.* The extract is given in the dose of two or three grains, and gradually increased until some effect is produced. The powdered leaves, which, if good, have a fine lively green colour, are to be given in the dose of gr. iii., and increased until their influence becomes manifest. "Vinegar is considered its best antidote."†

Hemlock has been mistaken for the following plants: chærophyllum bulbosum and silvestre, æthusa cynapium, cicuta virosa, scandens odorata, caucalis anthris-

* Orfila gives the following directions for preparing extracts:

"1. The plant must be taken when in full vegetation, and the flowers completely developed. Dried leaves treated with water, are perfectly useless.

"2. The juice is to be expressed, if the plant be succulent, if it be not succulent, water must be added, and then expression employed. In both cases expression is to be made without heat.

"3. The juice thus obtained is to be evaporated by a gentle heat in a very broad vessel, and in a water bath. When thus prepared the extract of hemlock is of a gold yellow and slightly reddish colour, whereas in the shops it is usually black."

In the tenth volume of the London Medico-Chirurgical Transactions, Mr. J. T. Barry gives a communication concerning a new mode of preparing pharmaceutical extracts. He evaporates the expressed juice in vacuo. Professor Jænisch, of Moscow, about the same time, proposed a similar mode for preparing such extracts. The superior quality of extracts made in this way must be obvious.

† Paris. Orfila.

cus, and the common parsley. It is distinguished by the ferruginous spots on the stalks.

Formulæ.

℞.—Extract. cicutæ ʒi.
Muriat. hydrar. gr. iv.—M. Divide into thirty pills. Dose, one three times daily, in scrofulous and syphilitic affections.

℞.—Tart. antimon. gr. x.
Sapon. med. ʒiii.
G. assafœtid. ʒi.
Extract. cicutæ ʒiss.—M. Divide into two grain pills. Dose, four or five three times daily.

℞.—G. assafœtid. ʒii.
Extract. cicutæ ʒiss.
—— aconit. ʒss.
Submuriat. hydr. ℈i.—M. Divide into two grain pills. Dose, four three times daily, in visceral indurations.

ATROPA BELLADONNA.—DEADLY NIGHTSHADE.

This is an European plant, and an exceedingly energetic narcotic. Its leaves are inodorous and of a slightly nauseous, sweetish, subacid taste. It does not appear that they lose any of their peculiar properties by drying. According to the analysis of Vauquelin, this plant contains an albumenoid substance, salts with a base of potash, and a bitter extractive principle, in which the active properties of the vegetable reside. It appears, from recent experiments, to contain also an alkaline element, to which the name of *atropia* has been given. The whole plant is extremely active. The berries, however, seem to be more intensely poisonous than the other parts; "and from their beautiful and inviting appearance they have often tempted the unwary" to fatal mistakes. In the Journal de Sedilot, Decembre, 1813, p. 364, there is an account given by M. E. Gaultier de Claubry, of the symptoms experienced by upwards of a hundred and fifty soldiers who were poisoned by eating the berries of this plant. They

were affected by the following symptoms: "dilatation and immobility of the pupil; insensibility, almost complete, of the eye to the presence of external objects; or at least confused vision; injection of the conjunctiva by a bluish blood; protrusion of the eye, which, in some, appeared dull, and in others ardent and furious; dryness of the lips, tongue, palate, and throat; deglutition difficult, or even impossible; nausea not followed by vomiting; sensation of weakness; lipothymia, syncope; difficulty, or impossibility of standing; frequent bending forwards of the trunk; continued motion of the hands and fingers; gay delirium, with a vacant smile; aphonia, or confused sounds, uttered with pain; ineffectual desires of going to stool; insensible restoration of health and reason, without any recollection of the preceding state."*

Alibert states, that in three children who had eaten the berries of this plant, nausea immediately came on; the pulse became feeble and irregular, and a delirium of the most singular character supervened. They cried, sang, and laughed alternately, and exhibited the most ridiculous and apparently involuntary gestures; the whole body was in agitation, and the countenance haggard and fixed.†

The effects of a full dose of this narcotic, in healthy individuals are: a sense of weight and fulness in the head, ringing or a buzzing noise in the ears, dilatation of the pupils, a somewhat accelerated pulse, increased temperature, flushed face, and generally a diffused redness over the whole surface of the body, diminution of the appetite, a feeling of dryness of the mouth, fauces, and œsophagus, and much thirst. After these symp-

* Orfila's Toxicology, p. 286, Dr. Nancrede's translation.

† A. M. Giraudy has written a dissertation entitled "Le délire causé par la Belladonna a-t-il un caractère que lui soit propre?"

toms have continued for three or four hours, they begin to abate, at the same time that the perspiratory and urinary secretions are increased. In a still greater dose, it gives rise to a sensation of constriction, attended with an extremely annoying dryness, of the œsophagus, and difficulty or even impossibility of deglutition, burning and spasmodic pains in the stomach, and often vomiting; a feeling of great fulness and weight in the head, vertigo, drowsiness, dulness, and confusion of the mind, with more or less delirium, and visual illusion. A further increase of the dose will give rise to the extremely violent and dangerous effects mentioned in the preceding page.

Belladonna possesses very important remedial powers. By some it has been a good deal praised for its virtues in the cure of cancer. Cullen's success with this article, as he informs us, was various. He cured entirely a cancer of the lip with it. He also employed it with success in a scirrhosity of a woman's breast, and in an ulcer of a cancerous nature below the eye. In other cases, however, it proved entirely ineffectual. Alberti and Juncker speak favourably of it in scirrhus of the intestines and stomach. Haller, De Haen, Heister, and more recently Rahn, of Zurich, have, however, not only not confirmed these favourable accounts of the powers of belladonna in scirrhous and cancerous affections, but have, on the contrary, found it injurious in such cases. In glandular engorgements and indurations of a scrofulous or ordinary character, great advantage may undoubtedly sometimes be derived from this remedy. Evers employed it in engorgements, and indurated tremors of the breasts, and in chronic intumescence of the uterus with entire success. (Schmucker's Vermischt. Schriften. Bd. iii. s. 242.) Dalruc also dissipated indurations of this kind, by the external and internal use of this article

(Jour. de Med. Vol. ii. p. 449); and Autenrieth declares that he has, in a considerable number of instances, derived very decided benefit from the external application of a strong infusion of belladonna to scrofulous tumours and swellings of the joints. (Richter's Spec. Arzneimittell. B. ii. p. 577.) A case occurred in the Polyclinic Institute of Berlin, which was regarded as an instance of indurated enlargement of the pyloric extremity of the stomach, and which yielded ultimately under the internal use of the extract of belladonna dissolved in diluted prussic acid. In scrofulous ulcers, this narcotic will occasionally produce the happiest effects. In cases of this kind, I have in a few instances employed the extract, in conjunction with minute portions of the muriate of gold, with the most satisfactory result.

For the cure of hooping-cough this remedy enjoys, at present, a very high character in Europe. Borda speaks in terms of unlimited praise of the advantages he has derived from it in this disease. Children, says he, to all appearance past recovery, have been saved by means of this remedy.* Hufeland, Schæffer, Kopp, Jahn, Henke, Richter, and Marc, speak of it in similar terms of praise. They consider it, indeed, as almost entitled to the character of a specific in this disease. Wetzler† is equally warm in its praise; and Alibert states, that in France, a similar success has attended the employment of this remedy. I have prescribed it in about a dozen cases. In two of these its good effects were promptly and strikingly manifested. In five or six, its advantages were much less obvious, and in a few it produced no change in the disease what-

* Primæ Lineæ.

† Wetzler recommends this remedy to be given in this way: Take of the powdered root, mix it with a sufficient quantity of sugar, and divide it into parts containing one-fifth of a grain each. This is a dose for a child under one year old, which must be repeated night and morning.

ever. I apprehend, however, that the extract which I employed was not very good; it was old, dry, and black. From the very numerous and respectable testimonies we have in favour of its powers in this disease, it certainly has claims to attention in the treatment of this harassing and intractable affection. It may be conveniently administered by dissolving four grains of the extract in an ounce of sweetened water, and giving from eight to twelve drops three times daily, to a child under two years old. As the extract, however, is of uncertain strength, the powdered root is preferable. It may be given in doses of from one-sixth to one-half of a grain, three times daily, according to the age of the child. Lenhosock says, that he has never found it necessary to give more than one-fourth of a grain in twenty-four hours. When the dose is too large, it is apt to produce vehement arterial excitement, and a general erythemous rash over the surface of the body, which, however, seldom continues more than two or three hours.

This article ought to be administered with great caution to robust, plethoric, and irritable subjects, or to such as are predisposed to strong determinations of blood to the head. It is seldom found beneficial in hooping-cough, but often decidedly injurious, when inflammatory or febrile symptoms are present.

According to Mr. Q. Bailey's experience, belladonna is the most efficacious remedy we possess in tic douloureux.* He records many cases of extreme violence, which were effectually cured by this remedy, after every other mode of treatment had been tried without success. He usually exhibited from two to three grains of the extract, or from twenty to thirty minims of the

* Observations on the Use of Belladonna in Painful Disorders of the Head and Face. London, 1818.

tincture every four or five hours, while the paroxysm was violent, and in smaller doses when the pains were mitigated. He informs us that the employment of this remedy sometimes produces vertigo, impaired vision, insensibility, tightness across the breast, and a sense of suffocation and dryness in the throat; but these effects do not continue long, and have never been observed to leave any unpleasant consequences.

It has been much spoken of by some German writers, as a remedy for hydrophobia.* Mr. Munch, of Hanover, and Bucholz, of Weimar, speak of their success in this way. Burdach also speaks favourably of its powers in this frightful disease. It is, however, but too certain that all such hopes are fallacious, and that we are yet entirely without any effectual means for arresting its dreadful and fatal course.

By some physicians this remedy has been a good deal extolled for its powers in epilepsy. Greeding, Hufeland, Stoll, and Mayerne, have published observations favourable to the employment of belladonna in this disease. Subsequent experience has not confirmed these expectations.

The belladonna has also been employed in mania and melancholia.† It is said to be particularly applicable to cases consequent to a suppression of some accustomed evacuation, or the repulsion of cutaneous eruptions. I know nothing of its powers, from my own experience, in these affections. That they are but inconsiderable, may be inferred from the almost total neglect of this article in the treatment of these diseases.

Belladonna has been recommended as a valuable

* T. H. Münch kurze Anweisung wie die Belladonna in tollen hund biss Anzuwenden ist. Göttingen, 1783.

† Observationes practicæ circa usum Belladonna in Melancholia, Mania et Epilepsia. J. H. Münch. Götting. 1783.

remedy in paralysis, more especially of the extensor muscles. Richter says, that in affections of this kind, this remedy has been too much neglected; and Jahn (Klinik. d. Chron. Krankh., vol. i. p. 365) declares, that cases which do not yield to this remedy, may be regarded as incurable. Schmucker used the belladonna with success in hemiplegia, and Selle cured several cases of paralysis of the tongue by its use. It has also been successfully employed in some cases of local palsy by Verschuir (Gerson and Julius' Journal d. Auslaend Med. Literat. vol. vi. p. 57.)

Mr. Bailey* states, that in a violent case of hysteria, which had withstood all other remedies, the efficacy of this article was conspicuously shown. I have employed the tincture of this plant in chronic hysteria with unequivocal advantage. It is particularly beneficial in cases attended with pain in the stomach and bowels. In chlorosis, also, unattended with febrile irritation, the use of this tincture, in conjunction with the prussiate of iron, has in several instances appeared to me of material service. It has also been recommended in other spasmodic diseases, such as chorea, asthma, spasmodic ischuria, dysphagia, &c.

Burdach speaks of its successful employment in amaurosis, sciatica, loss of speech, and hemiplegia.

The belladonna, in common with some other plants of this class of remedies, possesses the property of dilating the pupils of the eyes in a remarkable manner, whether it be taken internally or only applied upon the external parts of the eyes. Advantage is taken of this property to dilate the pupils, in order to facilitate certain operations on the eye, as couching, &c. It has also been employed as a local application, to relax the mouth of the womb when too rigid in parturition. Dr.

* Observations on the Use of Belladonna.

Conquest (Lond. Med. Reposit. vol. xiii. p. 75) states, that in a case of this kind, he injected a strong infusion of belladonna into the vagina, which was speedily followed by complete dilatation of the os-uteri. Chaussier employed for this purpose an ointment composed of two drachms of the extract, and an ounce of lard, which he applied to the mouth of the womb, and he asserts, that even when applied to the vulva and lower part of the vagina, it will often, in a short time, cause complete relaxation of the os-uteri. He declares, that for fifteen years he has, in nearly every case of rigidity of the os-uteri which occurred in his obstetrical practice, resorted to this application, and that it almost uniformly had the desired effect in less than forty minutes.

We have also the testimony of Henne (Rust's Repertor. vol. xiv. p. 137), of Mandt (Rust's Magazine, vol. xix. p. 350), and of Vogt (Pharmakodynamik, vol. i. p. 133), in favour of the usefulness of this narcotic in difficult labour, from rigidity of the os-uteri.

Hufeland states that he has been in the habit of employing the fumes of narcotic plants, in convulsions, epilepsy, and other nervous affections, with very considerable success. He takes equal portions of belladonna and hyoscyamus with a few grains of opium and exposes them to the heat of an alcoholic lamp on a thin iron plate in a vapour bath. The patient remains in this bath from fifteen to twenty minutes, care being taken that the fumes do not reach the face. The immediate effects are copious perspiration, succeeded, commonly, by a sense of fulness, and occasionally also with tremors, vertigo, difficulty of breathing, and very rarely spasms. Hufeland gives an account of twelve cases of epilepsy, all of which were cured in this way.*

* Revue Medicale, 1822.

A great deal has of late years been written concerning the alleged prophylactic powers of belladonna against scarlatina. It is said that the internal administration of this narcotic will, in a vast majority of instances, protect the system completely against the influence of this contagion. Its prophylactic powers, in this respect, were first noticed by Hahnemann. He asserts, that he has, in a great many instances, found it to afford entire protection against this disease in children who were much exposed to its contagion. Hufeland also employed it in a number of cases, and the result convinced him fully, that it possesses the power of preventing scarlatina. We have also the testimony of Brera, Kopp, Hedenus, Berndt, Behr, Wagner, Kœhler, Bloch, and many other writers, in favour of its decided efficacy in this respect. When employed for this purpose, it should be administered in very minute doses. Hufeland directed three grains of the extract to be dissolved in an ounce of water, of which as many drops are to be given, three times daily, as the individual numbers years in age,—that is, one drop to a child one year old, two drops to one two years old, &c.

The most convenient and effective mode of administering the belladonna is, by employing the powdered leaves or root. One grain of the powder of the leaves may be given to an adult morning and evening, and gradually increasing the dose to as much as can be borne. The root, if well dried, is somewhat stronger than the leaves, and must, therefore, be given in smaller doses. The extract is extremely variable in its strength. If good, it must be commenced with in the dose of gr. ss. An over-dose produces so great an insensibility of the stomach as to render it almost impossible to excite vomiting by the strongest antimonial emetics. Vinegar is accounted the best antidote to this poison. It renders the operation of emetics more certain and prompt.

Formulæ.

℞.—Tinct. belladon. ℥ss.
Tinct. scillæ ℥i.—M. Dose, from ten to twenty drops three times daily, to children between one and five years old, in hooping-cough.

℞.—Extract belladon. ℈i.
G. assafœtid. ʒi.
G. aloes socc. gr. xv.—M. Divide into thirty pills. In chronic hysteria, one to be taken two, three, or four times daily.

STRAMONIUM.—THORN-APPLE.

This is a very common plant in this country, known familiarly by the names of Jamestown weed, thorn-apple, or stink-weed. It is a powerful narcotic, and has of late become of considerable importance for its remediate powers. It contains gum, resin, carbonate of ammonia, and an alkaline principle which has received the name of *daturia*.*

On being received into the stomach in an over-dose its effects are exceedingly violent. The pupils dilate very much; vertigo, delirium, tremors, retching, excessive thirst, mania, and convulsions come on. The mania is of a very singular character, being attended with the most antique gestures, screaming, laughing, crying, and distorting the face continually. A deep coma comes on before death.

We are indebted to Baron Storck for the introduction of this powerful article into regular practice. He used it in mania, epilepsy, and other convulsive affections; and the result of his experience was much in favour of its remediate powers.† Sidren also adds his testimony in behalf of the efficacy of this remedy in convulsive diseases.‡ The experience of Wedenberg and

* Paris's Pharmacologia.

† Ant. de Storck Libellus, quo demonstratur, stramonium, hyoscyamum, aconitum, non solum tuto posse exhiberi, &c. Vindob. 1762, c. iii. tab. 8.

‡ Sidren de Stramonii usu in morbis convulsivis. Upsal, 1772. In Baldinger's Sylloge, vol. ii.

Odhelius* was less favourable; nor has later experience, upon the whole, confirmed the hopes which the trials of Storck and others were calculated to inspire. The late professor Barton, however, considered it "a medicine of great and valuable powers," in the treatment of mental, as well as other diseases. He advises large doses in mania. In one patient he carried the dose from two grains of the powdered leaves to sixty. "When the patient (a maniac) had continued upon this dose for some time, she broke out into boils, upon various parts of the body, and was at length discharged from the hospital cured."† In an instance of hysterical mania, which came under my notice a few years ago, the employment of this remedy afforded unequivocal benefit. On the third day after the use of the stramonium was commenced, the maniacal symptoms began to subside, and in a few days more, they were entirely removed. The disease had continued for upwards of three weeks before this remedy was resorted to.

This article has also been successfully employed in epilepsy. Dr. J. Fisher, a practitioner of high standing in Massachusetts, speaks very favourably of its employment in this disease occurring in young persons, and at regular periodical intervals. This article is more likely to prove beneficial when assisted by the simultaneous use of chalybeates. The patient should be kept under the constant influence of the medicine. He recommends the employment of a saturated tincture as most convenient for children. The dose is to be regulated by the dilatation of the pupil.

It has also been used in chorea, tetanus, and palsy. I have never employed it in any of these affections;

* Wedenberg de Stramonii usu in morbis convulsivis.

† Collection for an Essay towards a Materia Medica of the United States, p. 48.

but I have no doubt, from its general properties, that, like many of the articles belonging to this class, it may be occasionally found successful in such cases.* Kreysig treated a case of chorea successfully by exhibiting half a grain of the extract twice daily. This case was brought on by standing a long time in cold water. Odhelius, also, derived great benefit in cases of this kind from this remedy; and Hufeland employed the tincture, both in epilepsy and chorea, with evident advantage. (Hufeland's Jour. Vol. ix. p. 91.)

Its chief importance, however, consists in the excellent effects which it produces in chronic diseases, attended with violent pain. Dr. Marcet is the first who noticed particularly its salutary operation in affections of this kind. "If I were called upon," says he, "to express in a few words the general opinion which I feel inclined to form from the opportunities I have had of studying the properties of stramonium, I should say that the most common effect of this remedy, when administered in appropriate doses,† in cases of chronic disease attended with acute pain, is to lessen powerfully, and almost immediately, sensibility and pain; to occasion a sort of nervous shock, which is frequently attended with a momentary affection of the head and eyes, with a degree of nausea, and with phenomena resembling those that are produced by intoxication; to excite, in many instances, nervous sensations which are referred to the œsophagus, or bronchiæ, or fauces, and which sometimes amount to a sense of

* In the New-England Medical and Surgical Journal, vol. iv. p. 226, a singular case of spasmodic cough is reported, which yielded readily to the extract of stramonium, after a very great variety of other remedies had been tried in vain. The cough was attended with convulsions, subsultus tendinum, and other distressing nervous symptoms.

† From one-eighth of a grain to a grain a dose, which should not be exceeded until its effects have been observed.

suffocation; to have rather a relaxing than an astringent effect upon the bowels; to have no marked influence upon the frequency of the pulse, though, in a few instances, it has appeared to render it somewhat slower; to produce but a transitory and inconsiderable dilatation of the pupils; and to have but little immediate tendency to induce sleep, except from the state of comparative serenity and ease which generally follows the symptoms I have just described."*

The diseases of this kind in which this remedy appears to be most efficacious, are chronic rheumatism, sciatica, tic doloureux, and the violent pains which sometimes attend cancerous affections.

Dr. Scudamore states, that he had succeeded with it in relieving gouty pains, dependent or immediately connected with spasm. He found the stramonium more decidedly useful when given in combination with lactucarium. "From reflection on my experience," says he, "I am tempted to affirm that the former acts most as an anodyne, the latter as a sedative; and whenever both effects are desired, they will be most favourably procured from the union of the two preparations."†

I have employed stramonium in rheumatism and sciatica, and the result of my trials has been exceedingly flattering. It appears to me to be the most efficacious remedy we possess in those cases of chronic rheumatism which are attended by an irritable, quick, but weak pulse, swelled joints, and unattended by any great pain, unless on being moved. I have

* On the Medicinal Properties of Stramonium, &c. by A. Marcet, M. D., in the Medico-Chirurgical Transactions, vol. vii. p. 2.

† A Treatise on the Nature and Cure of Gout and Rheumatism, &c. p. 129.

used it in three cases of sciatica within a year past, and in every instance with the most decided advantage.*

Dr. Marcet tried it in three cases of tic doloureux. One case was essentially benefitted by it; in another its effects were equivocal, and in the third it failed entirely. Dr. Bigelow, of Boston, found it decidedly useful in a case of this kind.†

I have employed the tincture of stramonium with excellent effects in dysmenorrhœa. By exhibiting from twenty to thirty drops of the officinal tincture three times daily, for two or three days immediately preceding the period of the menses, the distressing pains attending this affection will, in some instances, be entirely prevented. In one case it effected an entire cure.

Dr. Elliotson strongly recommends the use of this narcotic in spasmodic pain of the bowels (*enterodynia*,) unaccompanied with febrile excitement, or the presence of irritating substances.

In asthma it has been much employed by smoking the root and dried leaves in a common tobacco pipe. I have prescribed the use of it in this way in a number of instances, and my patients have occasionally expressed themselves considerably relieved by it. In the East Indies, the root of the *Datura ferox* is regarded as almost a specific for the cure of spasmodic asthma. It is cut into thin chips, and smoked in a pipe. It appears, however, to possess extremely active narcotic

* I have seen the stramonium employed in domestic practice for the cure of rheumatism, above twelve years ago, while practising in Lancaster county. I recollect that a rheumatic patient, upon whom I had in vain exhausted all the usual resources in this disease, was cured in less than two weeks by an old woman, who administered a saturated tincture of stramonium seeds, in the dose of a tea-spoonful three times a day.

† Bigelow's American Medical Botany, vol. i. p. 23.

powers. Richter states, that he tried it in one instance, but was immediately obliged to lay it aside. In a few moments it produced stupor, vertigo, and confusion of mind. Ward, (Lond. Med. and Phys. Jour.) however, employed a tincture of this species of datura, made by digesting four ounces of the leaves in fourteen ounces of alcohol, mixed with one ounce of caustic ammonia, with evident advantage in asthmatic affections. He gave from fourteen to twenty-four drops, once or twice daily.

An ointment made of the leaves of this plant frequently affords great relief when applied to painful and irritable ulcers, and hæmorrhoidal tumours. Dr. Bigelow states, that the stramonium ointment with the ointment of acetate of lead, forms one of the best applications in this affection.

Like the belladonna, it produces great dilatation of the pupils, when applied to the external parts of the eyes.

The following doses of the stramonium must be commenced with:

Of the powdered leaves, one grain.
powdered seeds, half a grain.
Of the inspissated juice or extract, one grain.
extract of the seeds, from one-fourth to half a grain.
tincture, from fifteen to twenty drops.*

ACONITUM NAPELLUS.—WOLFSBANE.

This is a powerful narcotic poison, and was well known as such to the ancients. Ovid alludes to its

* Bigelow's American Medical Botany, vol. i.

baneful properties, and the fatal purposes to which it was sometimes applied by the wicked.

Lurida terribiles miscent aconita novercæ.—*Metam.* i. 148.

There are four species of aconitum possessing pretty nearly the same powers. The aconitum napellus, cammarum, neomontanum, and tauricum, all of which are indigenous to the alpine regions of Europe. The aconitum napellus is, however, almost exclusively employed in medicine. The juice of this species has a disagreeable smell, and a nauseous acrid taste. According to the analysis of Bucholtz, the fresh root contains a green resin, albumen, a bitter and acrid extractive matter, with nitrates and acetates, gum, malate and citrate of lime. Brandes has discovered in the aconitum napellus, a peculiar alkaline principle, to which the *aconitia* has been given. The acrimony of the plant is almost entirely destroyed by exsiccation. When taken in excessive doses it produces sickness, giddiness, delirium, fainting, cold sweats, asphyxia, spasms, involuntary stools, apoplexy, and death. It has been known, on being introduced into a small wound of the thumb, to produce "pain in the fingers and arm, cardialgia, anxiety, with fear of suffocation, lipothymia, agitation, and finally grangrene, and copious suppuration."* When the leaves of this plant are chewed in small quantity, they cause a sensation of numbness in the gums and lips, which continues for two or three hours.†

Aconitum has been a good deal employed in the practice of the German and Italian physicians; and it seems still to enjoy no inconsiderable reputation among

* Orfila's Toxicology, by Dr. Nancrede, p. 220. Alberti Jurisprudentia Medica, tom. vi. p. 724.

† Brodie; in the Philosoph. Transact. An. 1811, p. 185.

them. Storck first introduced this article into regular practice. The character, however, which he gave it was, upon the whole, too flattering; and later experience has not fully confirmed the favourable account which he gave of its powers. There is, notwithstanding, sufficient testimony extant in its favour to establish its claims to our attention; and I am led, independent of such testimony, from my own experience, to regard it as an article possessing valuable medicinal virtues.

It is often of decided advantage in rheumatic and syphilitic pains, consequent to a mercurial course. I have been in the habit, for several years past, of giving a dose of the extract of this plant to such of my patients as are suffering from pains of this kind, as an anodyne, on going to bed, and I have often had reason to be satisfied with its effects. Borda,* an eminent Italian physician, commends its powers very highly in these affections. Richter says, that in acute rheumatism, after the fever had in a great degree subsided, but where much pain was still experienced in the affected parts, he has frequently known very decided relief obtained from the use of a solution of the extract of aconitum in antimonial wine. One drachm of the extract should be dissolved in an ounce of the wine, and taken in doses of from fifteen to thirty drops every four hours. It has also been extolled for its virtues in chronic rheumatism and gout.† In a case of the former of these diseases I employed it in large doses, and derived some advantage from it. Its virtues appear to be much enhanced by being united with antimonials in cases of rheumatism. It is, however, so decidedly inferior to stramonium in this respect, that it may very properly be neglected for this latter remedy in these affections.

* Primæ Lineæ.

† Böhmer de usu salutarii extracti aconiti in Arthritide. Halæ, 1768.

Swediaur used this narcotic, with a very good effect, in gleet, complicated with rheumatism.

Borda praises it as one of the most valuable remedies we possess for relieving morbid secretions of the trachea and bronchia. "Crebro," says he, "etiam obstupui animadvertens extractum aconiti nedum sputorum redundantiam ocissime repellere, sed naturam eorum ita immutare ut mihi omnem præperceptum abstergeret metum proximæ desperatæ phthiseos cui mors quasi saxum tantali impendet." Busch recommends this article as an excellent remedy in phthisis pulmonalis. It is said to be particularly useful in bronchial consumption, or chronic bronchitis. Baumes, also, speaks highly of its effects in this complaint. Both these writers say, that this narcotic is most apt to prove beneficial when given in the first stage of the disease.

Burdach states that it has been applied successfully to the cure of obstinate quartans. It has also been used with advantage, according to the same writer, in amaurosis.

I need scarcely say that its once reputed powers in the cure of cancer, are entirely fallacious. Yet in the treatment of scrofulous, venereal, and other obstinate ulcers, it has been known to be of unequivocal advantage.* We have also accounts of its efficacy in goitre, scirrhous breasts, mesenteric obstructions, and nodes.

The aconitum is generally employed in the form of an extract. Half a grain is sufficient to commence with, if it be good, and gradually increasing the dose to

* Vogler recommends the following compound in the treatment of arthritic and rheumatic cases:

℞.—Succ. inspiss. aconiti. napel.
Antim. sulphuret. precipit. āā gr. i.
Magnesia, gr. x.—M. To be taken for a dose.

as much as can be borne without inconvenience. The tincture is to be commenced with in the dose of gtt. xv. and gradually increased. Of the powdered leaves one grain is an ordinary dose.

Formulæ.

℞.—Tinct. guaiaci. volat. ℥ii.
Extract. aconit. ʒi.
Vin. antimonii ℥i.—M. Take a tea-spoonful three times daily, in chronic rheumatism.

℞.—Extract. aconit.
Sulph. aurat. antimon. āā ℈ii.
G. guaiaci. ʒiv.—M. Divide into two grain pills. S. Take four pills three times daily; in chronic cutaneous diseases.

℞.—Fol. aconit. ℥ii.
Liquor. anod. Hoff. ℥viii.—M. Digest for three days. This is a very active preparation, and may be employed with much benefit in chronic hysteria, with nervous pains in the abdomen. The dose is from fifteen to twenty drops, four times daily.

SOLANUM NIGRUM.

This is a very common plant in the United States, and generally found growing in gardens. It possesses a slightly fœtid odour; its taste is insipid and herbaceous. Alibert,* states that a boy aged eight years, eat some of the black berries of this plant, which induced coma and torpor, attended with fever. He complained of great pain in the pit of the stomach, and was harassed with nausea and retchings. According to the experience of M. Dunal, it would appear that the extract of this plant is not very poisonous, but that it has the power of slowly destroying sensibility and irritability.† That the berries, however, are an active narcotic poison, I have had the most satisfactory evidence in a little girl, while I practised in Lancaster. Being called to visit this little patient, I found her lying

* Nouveaux Elémens de Thérapeutique, &c. tom. i. p. 417.
† As quoted by Orfila.

in a deep apoplectic stupor—entirely insensible, all the muscles relaxed, the face flushed, and the pulse full and irregular. She continued in this state about six hours, and then gradually recovered. When she had become sensible again, it was ascertained that she had eaten of the berries of this plant.

M. Desforres, of Besancon, has obtained from this species of solanum, as well as from the solanum dulcamara, a peculiar alkaline principle, upon which the active properties of the plants appear to depend, and which has received the name of *solania*. This substance consists of a white, opaque, and sometimes pearly powder, without odour, and a slightly bitter, nauseous taste. It is insoluble in cold water, soluble in eight thousand parts of hot water, and sparingly in alcohol. Acids dissolve it speedily and afford a perfectly neutral solution. In doses of from grs. ii. to grs. iv. given to dogs or cats, it excites violent retching and vomiting, followed speedily by drowsiness, which continues several hours. Eight grains did not destroy a kitten, although violent vomiting and stupor ensued. In the human subject, a very small quantity excited great irritation in the throat, accompanied with a very nauseous and bitter taste. Dissolved in active acid, which is said to be the best way for administering the solania, it may be given in quarter grain doses, two or three times daily. This solution almost always produces some degree of nausea, but no subsequent drowsiness.*

The solanum nigrum was very early introduced into the materia medica. It was used among the ancients as an external application, either in the form of poultice or its expressed juice, in a great variety of diseases.†

* Magendie's Formulæ, &c. translated by W. Darrach, M. D. of Philad.
† Dioscorides, lib. iv. c. 71.

Cæsalpinus states that it was frequently employed as an internal remedy in inflammations of the stomach and bowels, and for ardor urinæ.* It had, however, fallen almost into entire neglect, until the attention of the profession was again called to it by M. Gataker, surgeon of Westminster Hospital, in a paper read to the Royal Society, in 1757, and afterwards published in a separate work, under the title of "Observations on the Internal Use of the Solanum, or Nightshade." The account which this writer gives of the medicinal properties of the solanum nigrum, is highly interesting, and, I conceive, in no degree exaggerated. He describes the following as its effects when exhibited in proper doses: "I found," says he, "from repeated trials, made with great caution, and safety to the patient, that so small a quantity as one grain weight of the leaf, infused in about an ounce of water, and the liquor afterwards strained from the leaf, and taken at bed-time, would sometimes have a considerable effect; but that two or three grains seldom failed either to vomit, sweat, or purge the patient moderately, or to increase the quantity of urine. It sometimes occasioned a giddiness, especially when it made the patient sick; but neither the sickness nor giddiness were constant symptoms; and when they happened, they generally abated or entirely ceased after the first dose. The most common effects that I have observed to ensue upon taking the medicine were, a heat or warmth diffused in a few hours over the body, a plentiful sweat succeeding this heat, and a purging the next day. If a sweat did not break out, an extraordinary discharge of urine was the consequence, and frequently followed likewise by purging. One or more of the natural evacuations were almost always increased."†

* De Plantis, 213.

† Observations on the Use of Solanum, p. 8.

The disorders in the cure of which he found this plant to be more particularly advantageous, are, foul and painful chronic ulcers; pains in particular parts of the body; scorbutic eruptions, and ulcers of a cancerous nature. He relates a number of cases of each of these diseases, as having been successfully treated by this remedy, in his own practice, and he gives some on the authority of others, equally favourable to its powers. From my own experience I am entirely convinced that the remediate virtues of this plant are by far too much neglected, and that they are capable, in certain cases, of affording important advantages. While practising in the country, I very frequently exhibited this species of solanum in obstinate herpetic eruptions, and foul and painful ulcers, and often with the most decided benefit. I have also employed it with much advantage in syphilitic eruptions attended with nocturnal pains. The dose, however, which I gave was much larger than that mentioned by M. Gataker. I commonly commenced with two grains of the dried leaves made into a pill, night and morning, and increased the dose until considerable nausea was excited, or until effects indicating its complete influence, such as vertigo, tremor, and debility, or pain in the stomach, arose.

As an external application it has been highly commended for the cure of erysipelas.

SOLANUM DULCAMARA.

The dulcamara is a native of Europe and of this country; though with us it is most commonly found cultivated as a garden shrub. It is a climbing plant, with woody, brittle stalks,—it flowers in July, and bears red berries. The young twigs and leaves are the parts employed for remediate purposes, and should be collected early in spring.

It does not appear that this species of solanum was employed by the ancients as a medicine. Neither Theophrastus nor Dioscorides mention it in their works.*

The narcotic properties of this vegetable are much feebler than those of the plants I have already mentioned. It is not, however, destitute of active qualities; for when taken into the stomach in very large doses, it is capable of producing vomiting, spasms, delirium, convulsions and insensibility. Dr. Bigelow states, that he has known the dulcamara, when collected in full vigour, to produce vomiting, in the dose of a few grains of the powdered leaves, or of a small cup of the decoction. It generally, too, acts pretty strongly as a diuretic, and its effects on the bowels are almost constantly aperient.

It is said to contain a larger proportion of the peculiar alkaline principle *solania* than the S. nigrum. This circumstance does not countenance the opinion that the narcotic properties of these plants depend on the solania; for, were this the case, the S. dulcamara, which contains a greater proportion of this substance than the S. nigrum, ought also to possess more active narcotic powers, which, however, is contrary to the results of experience.

This plant was formerly regarded as a very important remedy; and it is still thought by many to possess medicinal properties of very considerable value.

From what I have myself seen of its effects, I am induced to regard it as a valuable article. It is of unquestionable service in herpetic and syphilitic eruptions. Dr. Crichton, physician to the Westminster hospital, states, in a letter to Dr. Willan, that he has found only two cases out of twenty-three of lepra græcorum to

* Gataker on the Solana.

resist the curative powers of the dulcamara.* Willan and Bateman add their testimony in favour of the utility of this remedy in the treatment of cutaneous diseases. The latter says, "One of the most effectual remedies in lepra, under all its varieties, is the decoction of the leaves and twigs of the solanum dulcamara."†

In the London Medical and Physical Journal, for May, 1830, Mr. Gardner has published a paper in which he confidently asserts, that the solanum dulcamara, if properly administered, is a most valuable remedy in chronic diseases of the skin, more especially in those which are attended with much irritation, pustules, vesicles, scales, &c. In psorlasis, in several varieties of impetigo, in eczema and porrigo, as well as in lepra and ichthyosis, he delares that he has used this remedy with uniform success. "To insure success with the use of dulcamara, it is necessary that it should be collected at a proper time, and carefully dried; it should, when dry, yield a powder of a bright green colour. The dose should be gradually increased until sickness, vertigo, and purging are produced. In no case have I known any benefit to be derived from its use, unless symptoms of its influence on the system were produced. The decoction, to be good, should be of a dark green colour, depositing a copious sediment as it cools, which should be shaken into the fluid before it is administered." (Lond. Med. and Phys. Jour., May, 1830.)

* The following is his method of employing this remedy:—Take of stalks of dulcamara one ounce; water one pound and a half; boil to a pound, and strain when cold. Of this decoction two ounces are to be administered at first, morning, noon, and night, and then gradually increased until the patient takes of it to the amount of a pint a day. At the same time the skin is to be washed with a stronger decoction. If it produces giddiness, syncope, or palpitation, the dose is to be decreased. The good effects of this treatment are generally not observed until it has been continued for eight or nine days.

† Practical Synopsis of Cutaneous Diseases. By Thomas Bateman, M. D. F. L. S., p. 34.

Hufeland also declares that he has often used the dulcamara with decided benefit in chronic cutaneous diseases; and we may also cite the very respectable testimony of Carrere, Althof, and Sprengle, in favour of its usefulness in affections of this kind. Hufeland says, that he found the following combination particularly valuable.* The eruption is at first, generally, somewhat increased before it begins to disappear under the use of the narcotic. Alibert,† however, regards it as of doubtful efficacy in affections of this kind. From a very considerable experience with this remedy in the hospital St. Louis, he is led to consider it as at most but a useful auxiliary to more vigorous applications. Much of the contradictory experience in medicine depends, perhaps, on the different modes and doses of exhibiting remedies. It appears from the writings of this physician, that the medicine was employed in much smaller doses in his practice than is generally used by the English and American physicians. It is, therefore, not improbable that Alibert's want of full success with this remedy, arose, in part, from his having used it in insufficient doses. It should, I think, always be given in doses sufficient to render its influence upon the system manifest, by the vertigo, palpitation, &c., which it produces.

I have found the extract of dulcamara a very useful remedy for chronic venereal pains and stiffness of the muscles. In the treatment of chronic rheumatism, too, this narcotic has been highly recommended. Kuhn, Althof, Hufeland, and Stark, have published statements illustrative of its good effects in this disease. It is

* ℞.—Antim. crud. ʒi.
Extract. dulcamara ʒiv.—M. Divide into three grain pills. S. Take six pills, three times daily, and gradually increase the dose to fifteen or twenty pills.

† Elémens de Thérapeutique.

said to be particularly beneficial in cases of rheumatism, arising from the abuse of mercury, or from the effects of cold while the system is under the mercurial influence.

Walsh (on Venereal Affections, &c. 1811) says, that in rheumatism and other chronic affections from these causes, he has almost uniformly derived signal advantage from this remedy; and Girtanner declares, that in diseases of this kind, its powers cannot be too highly estimated. Let it be borne in mind, however, that to derive any decided benefit from this article, it must be given in full doses, and continued regularly until it produces some manifestations of its action, such as vertigo and nausea.

Boerhaave and Werlhop speak highly of the powers of this remedy in phthisis. It need hardly be observed, that subsequent experience did not confirm their sentiments on this point. Linnæus recommends it as a most powerful remedy in jaundice and asthma.*

From its diuretic properties it has sometimes produced useful results in dropsy. It is stated in the Gazette de Sante, that a Flemish lady "who had the reputation of possessing a specific for dropsy," employed the dried stalks of this plant.

Dr. Thacher states, that "the bark of the root, simmered moderately for some hours, in fresh butter or cream, forms one of the most efficacious ointments to be applied to excoriated nipples of nursing women."†

Bergius observes, that the narcotic properties of this plant are lost by drying; and that, of course, the fresh plant is much more powerful than when in a dry state.

The best mode of exhibiting this remedy is in the form of decoction or infusion. The following formula,

* Materia Medica, § 95.

† The Am. New Dispensatory.

altered from Quarin, is the one which I have commonly prescribed: take of the stalks (or twigs) of dulcamara, one ounce, cut them into small pieces, and bruise; steep them in a proper quantity of hot water for half an hour; boil afterwards for a minute or two over the fire. To a quart of the strained liquor, add of spirit. cinnamon. L. Ph. two ounces. Dose, a cup full three times a day.*

DIGITALIS PURPUREA.—FOXGLOVE.

This is a biennial plant, growing abundantly in the mountainous forests of Switzerland, and cultivated with us, both for the beauty of its flowers and for remediate purposes. When properly dried it possesses a faint narcotic odour, and a bitter, nauseous taste. It yields its medicinal virtues both to water and alcohol. "It contains extractive matter and a green resin, in both of which its narcotic properties reside.† It is also said to contain ammonia and some other salts.

When taken in an excessive dose, it produces heaviness of the joints, indistinctness of vision, nausea, syncope, trembling, vertigo, pain in the forehead and in the bottom of the orbits, drowsiness, slow and tremulous pulse, vomiting, and occasionally diarrhœa, with pain of the bowels, cold sweats, coma, convulsions, and apoplectic death. It has also been known to produce an inability to retain the urine. Small and frequently repeated doses occasion a peculiar distressing nausea, attended with anxiety and depression of spirits, debility, vertigo, false vision, great diminution of the frequency and force of the pulse, reducing it, sometimes slower than forty strokes in a minute; languor both of body

* Thesaurus Medicaminum, p. 113.
† Paris's Pharmacologia.

and mind. It sometimes renders the pulse irregular and convulsive, without diminishing its fulness. Its narcotic effects are by no means transient, they are, on the contrary, apt to continue long, and even occasionally to reappear after having subsided.*

In administering this powerful remedy, we ought always to bear in mind, that it will occasionally manifest no operation for many days, and then all at once display its powers, and bring on, very suddenly, the most alarming prostration. Dr. Baildon states a fact in the Edinburgh Medical Journal, July, 1807, which is extremely interesting as well as curious. After having got his own system under the sedative influence of digitalis, he found his pulse not lessened in frequency when he stood erect, beating then at the rate of above a hundred in a minute; when he sat down it beat considerably slower, and when lying on his back it fell as low as forty. He tried this experiment on himself repeatedly, and always found the pulse to vary in the same manner. He states also that he observed the same results in other persons to whom he gave the digitalis. Other practitioners have observed similar variations in the pulse, in persons under the narcotic influence of this medicine.

To Withering belongs the merit of having first regularly investigated the medicinal virtues of this plant. But, as is frequently the case with those who introduce a new remedy to the notice of the profession, he, without doubt, estimated its powers too highly. It is, notwithstanding, very deservedly considered as an important article of the materia medica; and although physicians do not now place much reliance in its powers as a remedy in phthisis, it is still on various accounts entitled to very great attention.

* Burdach, Arzneimittellehre, B. iii.

The question whether digitalis be sedative or stimulant in its primary operation, is still a subject of controversy. Dr. Sanders, who has written an excellent work on the foxglove, strongly advocates the latter doctrine, whilst others, with more correctness, contend for the former opinion.* I am entirely persuaded that its operation is immediately sedative; for it is certain that its stimulant effects, if it has any at all, are extremely feeble, and by no means proportionate to its ultimate sedative influence. "The fact of the sedative effects of digitalis," says Dr. Ferriar, "is so decisive, that I do not hesitate to employ this term, notwithstanding the jargon with which the public has of late years been abused, on the subject of sedatives."† By means of this remedy we may direct the action of the heart without evacuations, and often reduce its frequency and force more effectually than by any other means in our power.

From its extraordinary effects of diminishing the force and frequency of the heart and arteries, it is prescribed in a variety of diseases where this effect is desirable, and where venesection possesses no adequate power over the circulation. It is chiefly on these effects that its reputed advantages in phthisis are considered to depend.

Drake, Fowler, Beddoes, Mossman, Stafford, and others speak in terms of great confidence of the curative powers of digitalis in phthisis. Drake‡ gives an account

* "If any person were inclined to write a satire on medical evidence, the different testimonies respecting the properties of this single plant would furnish abundant materials. 'It is a diuretic,' says one physician. 'It has no diuretic power,' says another. 'It is a stimulant,' says a third. 'It is a sedative,' cries another. 'It has no properties at all,' exclaims a fifth."—*Ferriar's Medical Histories.*

† Essay on Digitalis, p. 2.

‡ London Medical and Physical Journal, vol. ii. p. 268.

of fifteen cases of confirmed consumption treated by this remedy, out of which nine were cured, one relieved, and five died. Mr. Magennis,* physician general at the naval hospital at Plymouth, instituted an extensive course of experiments with this article, in consumption. Out of seventy-five, fifty-three were in the purulent stage, and twenty-five in the incipient. Of these forty-four were cured, twenty-two relieved, and but ten died. Dr. Beddoes also expresses, in very strong terms, his good opinion of the digitalis in this disease. "I daily," says he, "see many patients in pulmonary consumption advancing towards recovery with so firm a pace, that I hope consumption will henceforward as regularly be cured by foxglove as ague by the Peruvian bark."† In incipient phthisis, Dr. Mossman‡ regarded this remedy as almost a specific.

Unreasonable as these hopes may now appear to us, it is certain that considerable advantage may occasionally be derived from the employment of this medicine. When we consider the power which foxglove possesses of lessening irritability and the impetus of the circulation, we can hardly doubt that it is peculiarly adapted to the early stage of this disease. In the commencement of this complaint, when inflammation is going on in the lungs, and before it has terminated in suppuration, digitalis may be of service by subduing the circulation, and thereby resolving the local pulmonic inflammation. Dr. Ferriar§ was the first who entertained this view of

* London Medical and Physical Journal, vol. v. p. 204.

† Observations on the Causes, Early Signs, and Prevention of Consumption, &c. by Thomas Beddoes, M. D., 1799.

‡ Essay on Glandular Consumption in the Medical and Physical Journal, vol. iv. p. 309.

§ "It is well known," says this judicious physician, "that bleeding with the lancet is very inadequate to the purpose of lessening (in some cases) the velocity of the circulation, unless it be carried to a dangerous

the modus operandi of digitalis in diseases of increased vascular action. Darwin, Fowler, and Drake referred the beneficial operation of this remedy in pulmonary consumption to its power of diminishing secretion and augmenting pulmonary absorption. We know, however, that the foxglove has a powerful tendency to diminish the activity of the heart and arteries; and as the most effectual mode of reducing inflammation is to lessen the general energy and velocity of the circulation, so we may fairly infer that in phthisis, which, in its earlier stages, is always attended with more or less pulmonic inflammation, digitalis, if it act beneficially at all, does so by virtue of its sedative properties. This accords with the experience of Dr. Magennis. "I have met," he observes, "with several instances in which the digitalis given freely and largely effected not the smallest reduction of the pulse; and in these the patients uniformly derived no advantage whatever from its use."*

Measles are often attended with an inflammatory condition of the mucous membranes of the lungs and trachea about the time the eruption is subsiding; producing hoarseness, cough, and dyspnœa, and not unfrequently leading on to pulmonary consumption. To obviate these occurrences, it is frequently necessary to adopt rigid antiphlogistic measures, of which bleeding and blisters are undoubtedly the most effectual. As an auxiliary to these means, digitalis has been employed with undoubted advantage. Dr. William Hamilton, of Suffolk,† says, it is "in the advanced stages of

excess. The foxglove furnishes us with the means of regulating the pulse to our wish, and of supporting a given state of velocity, as long as we judge it proper."—*Ferriar on the Medical Properties of the Foxglove*, p. 12.

* Lond. Med. and Phys. Journal, vol. v. p. 204.

† Observations on the Digitalis Purpurea, by Wm. Hamilton, M. D. p. 154.

measles, when the disposition of the membranes lining the chest to inflammation shall have ceased, or have been overcome by appropriate remedies, that its use will be found most effectual towards checking the consumptive tendency."

Of its powers in pneumonia not much can be said. This is a disease too rapid in its course to allow of such tardy modes of reducing the activity of the circulation. We are enabled by the lancet to effect this purpose in a much more prompt and effectual manner. The employment of this article, though, perhaps, never to be depended on in this case, as a principal remedy, may notwithstanding become an useful auxiliary after more prompt antiphlogistic measures have been employed, or where much general debility exists, attended with irritation of the lungs, difficult breathing, troublesome cough, quick and corded pulse, and a dry skin.

This article is well spoken of by Drs. Currie and Ferriar,* as a valuable remedy in active hæmorrhages. Richter also recommends it as particularly useful in hæmorrhages from the lungs and nose.† As a general practice, however, I agree with Dr. Chapman,‡ that wherever hæmorrhage depends on an active state of the circulation, and where this requires reduction, bleeding is at once the most direct, safe, and efficacious remedy. In hæmoptysis, however, where there is an irritable state of the heart and arteries, indicated by a small, quick, corded, and spasmodic pulse, digitalis may afford important advantages when venesection is of no avail. It is particularly recommended under such circumstances by Frank, Richter, and Ferriar.§

In cases of threatened abortion, attended with hæ-

* Medical Histories and Reflections, p. 104 and 258.

† Specielle Therapie, vol. iii. p. 296.

‡ Elements of Therapeutics, p. 265, first edition.

§ Observations, &c. p. 99.

morrhage, Mr. Burns recommends the exhibition of digitalis combined with opium. By this remedy, if given in strong doses, we diminish at once the contractile efforts of the womb, and the force of the circulation, and thereby lessen the chance of miscarriage and the hæmorrhage.

Digitalis has also been successfully applied to the cure of epilepsy. Burdach says it is particularly serviceable in this affection when attended with a strumous diathesis in children.

In the cure of spasmodic asthma, Dr. Ferriar states that he has found digitalis in conjunction with opium "remarkably useful. By keeping the patient constantly under the influence of the medicines, (a grain of each being given every four or five hours,) I have ever seen a permanent suspension of the symptoms of this disease. When the stomach will bear the digitalis without difficulty, I believe that very great and almost immediate relief may thus be obtained."* My own experience enables me to speak favourably of this practice. In two instances of this disease I derived very decided advantage from such a combination of opium and digitalis.

The foxglove has acquired some character as a remedy in mania. From its sedative effects it would not be unreasonable to expect useful results from its employment in cases of mania, where, after frequent purging and bleeding, the arterial and nervous systems remain in a state of increased excitement. Mr. G. Hill has used this remedy with considerable success in mania; and Dr. J. M. Cox† observes, that no case ought to be given up as hopeless in which this remedy has not been tried, and its employment persisted in, till

* Ferriar's Essay on Digitalis.

† Practical Observations on Insanity, &c., p. 85.

some obvious effects have been produced. He considers it most efficacious in those cases of mania where the circulation is increased without other febrile symptoms. "I had a patient," says he, "whose system was kept saturated, as it were, with digitalis for weeks in succession, whose mental wanderings seemed regulated by the state of the circulation: when the pulse was at ninety, he was constantly furious, at seventy, perfectly rational, at fifty, melancholic, and at forty, half dead. He was at length perfectly cured by such a dose of this remedy as kept the pulse pretty uniformly at about seventy, and yet he had sometimes taken three drachms of excellent tincture of digitalis three or four days following." Dr. Currie, also, in his observations on the digitalis purpurea, published in the fourth volume of the Memoirs of the Medical Society of London, states, that he has sometimes derived very great advantages from its employment in this disease.

According to the experience of Richter, digitalis is a remedy of much value in chronic pemphigus. He cured an inveterate case of this kind by the use of this article in combination with calomel and opium. He gave two grains of powdered digitalis with one grain of calomel and half a grain of opium, three times daily, with entire success. (Speciel. Therapie. vol. ii. p. 615.) Henning employed digitalis with marked benefit in herpetic eruptions. It has also been much extolled as an external application, in the form a strong infusion, in chronic cutaneous affections. Weavre (Lond. Med. Repos.) used it in this way in a case of inveterate itch, with complete success.

Some of the old English writers on the materia medica speak highly of digitalis as an external application to scrofulous ulcers. In the Annals of Medicine, a periodical work, the beneficial effects of this article,

as a local application in ulcers of this kind, are strongly set forth by Mr. Couch, of Polperro, in Cornwall. A strong decoction of the leaves was employed by this gentleman. It has also been employed internally in scrofulous affections with manifest advantage. Hufeland (Treatise on Scrofula, p. 249,) prescribed it with decided benefit in the early stage of active scrofula, and in the scrofulous diathesis. Administered in conjunction with burned sponge, Rust found it very beneficial in struma. Kotrum administered the extract of digitalis in union with the extract of cicuta, the golden sulphur of antimony and calomel, in scrofulous affections; and he asserts that he has often obtained important advantage from this combination.* Uwins obtained very favourable effects from digitalis in *tabes mesenterica.* (Lond. Med. and Phys. Jour., 1818.)

Like almost all other vegetables of great powers, this plant is found to be of very different strength, as it is met with in the shops. "It is therefore very important," says Dr. Paris,† "that the leaves of this plant be properly collected and accurately preserved; they should be gathered when the plant is beginning to flower; the largest and deepest coloured flowers should be also selected, for they are the most powerful; they should be also carefully dried until they become crisp, or they will lose much of their virtue. The powdered leaves ought to be preserved in opaque bottles, and kept from the action of light as well as of air and moisture; a damp atmosphere has a very injurious operation, by carrying off those faint poisonous effluvia

* ℞.—Extract. digitalis ʒss.
Extract. cicutæ ʒi.
Antim. præcipit. auri. ℈i.
Submuriat. hydrarg. gr. x.—M. Of this mixture, ten grains is to be taken mornings and evenings.

† Paris's Pharmacologia.

with which its efficacy seems to be intimately connected."

It may be exhibited in substance, tincture, or infusion. The powdered leaves are to be given in the dose of gr. i. two or three times a day, and gradually increased, until its effects become apparent. If it be given with a view to obtain its diuretic effects, it will sometimes be necessary to combine it with opium, in order to prevent it from occasioning a vomiting or purging, which lessen or destroy its diuretic powers. The effects of an over-dose are most effectually counteracted by opium or brandy, and epispastics to the stomach. The tincture is very commonly employed. The dose of it is twenty drops, which is to be cautiously increased. The cataplasma digitalis is made thus: fol. digit. sicc. ℥iii. (or fol. digit. recent. ℥iv.) aquæ ℔ii. coque ad dimidium; strain, and with the decoction and lintseed meal make a poultice.

When it is necessary to exhibit this remedy repeatedly during the day, its effects ought to be watched with the strictest attention, to prevent the alarming and even fatal consequences which may arise from administering this powerful medicine incautiously.

For the character and remedial employment of digitalis as a diuretic, see the chapter on this article under the head of Diuretics.

Formulæ.

℞.—Tinct. digitalis ℥ss.
—— tutolem ℥i.
—— opii ʒi.—M. Take forty drops, three times daily; in chronic cough.

℞.—Pulv. digitalis gr. vi.
—— nitrat. potass. ʒiss.
Submuriat. hydr. gr. iv.—M. Divide into ten equal parts. Dose, one every two hours; as an antiphlogistic in inflammatory affections.

℞.—Pulv. scillæ exsiccat. gr. iv.
—— digitalis gr. x.
Submuriat. hydrarg. gr. vi.

G. myrrh. ℈i.
Simul tere, et adde
G. assafœtid. ʒss.
Extract. gentian. q. s.—M. In pil. dividend. No. xv. Take one three times daily.

NICOTIANA TABACUM.

Tobacco is endued with very active poisonous properties, and may be applied to important remediate purposes. It possesses a narcotic fœtid odour, and a somewhat bitter and extremely acrid taste. By chemical analysis it is found to contain "mucilage, albumen or gluten, extractive matter, a bitter principle, an essential oil, nitrate of potass, and a peculiar principle upon which the properties of the plant are supposed to depend, and which has been named *nicotin*." Vauquelin considers this substance as approaching the volatile oils in its properties; it is colourless, of an acrid taste, and has the peculiar smell of tobacco; it occasions violent sneezing; "with alcohol and water it produces colourless solutions, from which it is thrown down by tincture of galls."* The active matter of tobacco is readily extracted both by water and by spirit, but more perfectly by the latter. By distillation the leaves afford an oil which possesses the peculiar powers of the plant in a highly concentrated state.

When tobacco is received into the stomach in a large dose, or is applied to any other part of the system susceptible of its influence, it produces nausea, great distress of feeling, cold sweats, vomiting, trembling, vertigo, spasm, insensibility, &c. When taken in an enormous dose it destroys life very speedily. Brodie,† from a number of experiments which he performed on animals with this plant, was led to conclude that it

* Paris's Pharmacologia, p. 534.
† Philosophical Magazine for August, 1811.

destroys life by rendering the heart insensible to the stimulus of the blood, and thus stopping the circulation. Orfila asserts,* that the action of tobacco is more energetic when injected into the anus than when received into the stomach.

It seems to be almost equally active when applied to the external surface in parts where the skin is broken. Orfila mentions, upon the authority of Vandumond, instances where the decoction of the leaves applied to parts affected with itch, excited violent vomitings and convulsions.† I saw a child a few years ago thrown into alarming convulsions and syncope, by the imprudent application of tobacco ointment to an obstinate pustular eruption on the top of its head.

As a remediate article, tobacco may be very usefully employed in many instances. Stahl recommended an extract of it, made by long boiling, as a very effectual and safe expectorant and diuretic remedy. Paris states, that long coction weakens the powers of this plant; the extract recommended by Stahl, may therefore be a safer and more effectual remedy in consequence of having its poisonous parts dissipated by the long-continued boiling, whilst its aperient, expectorant, and diuretic properties may not suffer any material diminution by such a process.

Tobacco has been successfully employed in the cure of dropsy and dysury. Dr. Fowler‡ has written a work expressly on its virtues in these diseases; and he speaks of it as a remedy which, if properly administered, is capable of producing copious diuresis. He used it in the form of infusion, of which he gave about

* System of Toxicology, article Tobacco.

† Recueil Periodique, tom. vii. p. 67.

‡ Medical Reports of the Effects of Tobacco in the Cure of Dropsies and Dysenteries, by Thomas Fowler, M. D. Lond. 1785.

eighty drops. He observes, that the best time for administering it is two hours before dinner, and on going to bed. He asserts, that he found it equally effectual in nephritis calculoso. Mr. Earl, surgeon of the Foundling Hospital, London, has published an interesting paper on the efficacy of tobacco injections in retention of urine.* The cases to which he considers it as particularly applicable are those which depend on a spasmodic state of the urethra, and which sometimes supervene in consequence of accidental causes, "in persons who have been long subject to strictures in the urethra, but who are still able to void their urine in a small stream." In instances of this kind it is often impracticable to introduce instruments into the bladder, and it becomes necessary to overcome the retention by other means. Under such circumstances, therefore, Mr. Earl has employed tobacco injections with great success in three cases, after all the usual means had been resorted to ineffectually. Dr. Westburg, also, states that he has frequently administered the tincture of tobacco in ischuria with signal success. He directs twenty drops to be taken every hour, in a glassful of flaxseed tea. (Revue Medic. Nov. 1823.)

With a similar intention of removing constriction, tobacco is employed in cases of incarcerated hernia, and frequently with complete success. For this purpose either an infusion or the smoke of the plant is injected into the rectum. The very great relaxation which is thereby produced throughout the whole body, generally enables the surgeon to reduce the protruded parts very readily.

The same practice will often produce almost immediate relief in cases of obstinate constipation, depending on a spasmodic constriction of the bowels. In employ-

* Medico-Chirurgical Transactions, vol. vi.

ing tobacco injections it is, however, of the utmost importance to proceed with very great caution. If the quantity injected be too great, it will produce the most alarming symptoms; such as vomiting, cold sweats, universal prostration, syncope, and even death. I have known an empiric destroy, in less than twenty minutes, the life of a charming little boy—the son of a gentleman at Lancaster, whose family I attended while residing in that place—by an immoderate injection of the infusion of tobacco. In general, a half a drachm of the leaves infused in eight or ten ounces of water, will be as much as can with safety be thrown into the rectum at one time.

Tobacco has also been recommended as an excellent remedy in dysentery. Dr. O'Brien employed it in the form of enemata, in the proportions of ten grains of the tobacco to six ounces of boiling water, at the same time that the abdomen was fomented with an infusion of the strength of two ounces to two pounds of boiling water. "When thus employed, tobacco is said to moderate the action of the heart and arteries, to allay the intestinal spasm, tormina and tenesmus, and to restore the free action of the cutaneous exhalents."

Tetanus, too, is one of the diseases in which tobacco has been employed with decided advantage. Dr. James Norcom relates a case which was cured by tobacco injections (Philadelphia Jour. Med. and Phys. Science). Dr. Anderson has reported three cases of traumatic tetanus which yielded to this remedy. He employed it by fomentations, baths, and enemata. We have also the testimony of O'Beirne, Gardener, and Lefoulon, in favour of the usefulness of this remedy in tetanus.

A cataplasm composed principally of this plant, applied to the pit of the stomach, was employed with success, both in epilepsy and obstinate intermittents, by

Dr. James Currie of Liverpool. The application was made about half an hour before the accession of the paroxysms of these diseases.

As an external application either in the form of an ointment or infusion, it has been a good deal recommended in porrigo, and other cutaneous diseases. I have used it in two instances in this affection, to a very great extent, without, however, deriving any permanent advantage from it. The late Professor Barton was in the habit of applying a poultice of tobacco leaves pounded in vinegar to the region of the stomach, in cases of worms. "In consequence of this application," he observes, "worms are often discharged after powerful anthelmintics have been exhibited internally in vain."* I have, in several instances resorted to this practice in cases of worms, without the slightest benefit, although the existence of worms in the bowels was rendered certain by the frequent spontaneous discharge of them.

STRYCHNOS NUX VOMICA.

The tree which affords this article is indigenous to the eastern continent. It is particularly abundant along the coast of Coromandel, Malabar, and at Ceylon. Its fruit, which is a berry of the size of a small orange, contains in its pulp the seed which is the officinal nux vomica. These seeds have been analyzed by Pelletier and Caventou, who obtained from them a yellow colouring matter, a concrete oil, gum, starch, bassorin, a small quantity of wax, and two peculiar alkaline principles, *brucia* and *strychnia*, united with a peculiar acid, which they named *igasuric acid*. *Strych-*

* Collections for an Essay towards a Materia Medica of the United States, p. 63.

nia, which contains the active properties of the nux vomica in a highly concentrated state, crystallises in small four-sided prisms, terminated by quadrilateral pyramids. It is inodorous, but has an intensely bitter taste, leaving a slight metallic flavour on the tongue. "So exceedingly bitter is this substance, that one part of it communicates a sensible taste of bitterness to 600,000 parts of water." It is very sparingly soluble in water, requiring 6667 times its own weight of water at fifty degrees of temperature for solution. Alcohol and the volatile oils dissolve it very readily. It forms neutral salts with the acids, which become "blood-red by the action of concentrated nitric acid." The deleterious effects of the nux vomica on cats, dogs, foxes, and certain birds, were long since observed by Gessner, Wepfer, Bunner, and others. By the more recent experiments of Desportes, Magendie, and Delisle, the peculiar powers of this substance have been more particularly elucidated.

When given to dogs as a poison, it produces great anxiety, laborious and confined breathing, retching, and nausea, tremors, violent convulsions, tetanic spasms of extraordinary force, asphyxia from immobility of the thorax, and death. In animals thus killed, Delisle, Magendie, and Desportes never found the least trace of inflammation. It appears to extinguish life by destroying the power of the respiratory muscles, and thus producing asphyxia. According to the experiments of Delisle, no effects whatever are produced when this substance is applied directly to an exposed nerve. When, however, thrown into the cavity of a serous membrane, it speedily proves fatal. Murray appears therefore to be wrong in attributing the deleterious effects of the nux vomica to its immediate operation on the nervous system.*

* Alibert, Elémens de Thérapeutique, &c. t. i. p. 435.

Its effects upon the human system are similar to those which it produces in animals. Magendie and Delisle observed that it has the power, when taken in a proper dose, of exciting strong spasmodic contractions of the voluntary muscles without materially affecting the more important vital organs of the system. M. Fouquier, physician of the Hospital de la Charite, taking advantage of this singular property, conceived the idea of applying it to the cure of paralysis. He accordingly administered it to a number of patients affected with paraplesia and hemiplegia, and obtained from it very important results. The effects of a sufficient dose were, invariably, strong muscular contractions of more or less permanency; consisting sometimes of sudden and transient starts, and at other times of clonic contractions of a tetanic character. These contractions are, in general, stronger in the paralytic parts than in those which are healthy. M. Fouquier observes, that a very strong dose has sometimes produced general tetanic convulsions, without however doing any mischief. Dr. Lescure* relates several cases of paralysis in which the nux vomica proved successful. He gave four grains of the extract, divided into two doses, daily, to a patient who had been for four years affected with paraplegia. The dose was gradually increased to six grains in the second week; the patient then began to feel heat in the stomach, a sense of constriction in the abdomen, difficulty of voiding urine, and now and then slight contractions of the muscles of the lower extremities. The remedy was now omitted for a short time. On being resumed and continued for some days, forcible and sudden contractions seized the paralyzed limbs, and the retention of urine was more complete than on the former occasion. On again omitting the

* Journal Universel des Sciences Médicales, tom. xi.

medicine these symptoms disappeared. It was then resumed in the dose of eight grains, and at the termination of three weeks, he again was taken with tetanic contractions, which continued four hours. The patient now gradually recovered the use of his limbs.

The nux vomica has also been employed in intermittents, mania, epilepsy, gout, rheumatism, cutaneous eruptions, hydrophobia, scrofula, and hypochondriasis. Hagstrom, a Swedish physician, asserts that he found it of great service in an epidemic dysentery. It was given in the dose of twenty grains of the powdered nut once a day in some barley-water, after the bowels had been duly evacuated by laxatives. It is also particularly commended by Hufeland, for its good effects in an epidemic dysentery that occurred at Jena in 1795. A late German writer of great respectability, states that he used it in an epidemic dysentery that prevailed at Melle, a town in the principality of Osnaburg, in 1800. He gave it in doses of two and a half grains every two hours. "It sometimes allayed the pain, though in a few individuals it increased it."* It does not appear, upon the whole, that its efficacy in this disease is such as to entitle it to any particular attention.

Strychnia has recently been employed with great advantage in certain diseases of the eye. Mr. Middlemore found it "of singular service" in a case of ptosis, dependent on partial paralysis of the levator muscle. He has also used this remedy with decided benefit in amaurosis. In cases arising from "overworking the eye," by confining it to the inspection of objects of the same colour, "or by looking for many hours daily, at bright substances of the same, or nearly the same colour, or subjecting it to sudden transitions from an

* Summa Observationum Medicarum, &c. L. I. Schmidtman, M. D. Beraline, 1819.

artificial glare to a comparative darkness;" in cases, in short, depending on mere functional torpor of the retina, unattended by structural change or congestion of the vessels of the eye, the use of this narcotic will often procure decided benefit. The mode of using the *strychnia*, in cases of this kind, is to blister the skin above the eyebrow, and after the cuticle is carefully removed, to sprinkle the powder on the raw surface. One-twelfth of a grain of the strychnia on each side, will be sufficient to begin with. It always causes very severe, smarting pain of the part upon which it is applied. "Some patients cannot bear its application; others require great care, and a very gradual augmentation of the quantity to enable them to bear it; whilst others will admit of its application without experiencing any other inconvenience than what arises from its action upon the sore." Dr. Short (Edin. Med. and Sur. Jour. Oct. 1830) states, that in eight out of nine cases of amaurosis, decided benefit was derived from the application of strychnia. It may be applied once daily. Dr. S. observes that the good effects of this article are generally enhanced by the previous use of mercury.

In paralysis, strychnia has been found highly beneficial. Dr. Geddings, of Baltimore, has given an account of some cases of this affection, in which the good effects of this remedy "were strikingly manifested."*

The nux vomica may be given either in substance or in the form of an extract. Four grains of the powdered nut, or two of the extract, may be given three, four, or five times a day, and continued until its operation on the system is adequately manifested. It will in general be necessary to increase the dose gradually, in order to obtain its peculiar effects. The alcoholic extract alone is employed.

* Amer. Jour. Med. Sciences, vol. vii. p. 334.

In cases of poisoning from nux vomica, Orfila recommends two spoonfuls of the following mixture every ten minutes, after the contents of the stomach have been evacuated:—R. Æther vitriol. ʒi.; ol. tereb. ʒii.; sacch. albi, ℥ss.; aqua pura, ℥ii. The best mode of administering strychnia internally, is to dissolve two grains of it in an ounce and a half of distilled vinegar. Of this solution, twenty drops may be given twice, or even three times daily, in a small portion of the infusion of orange peal.

Formulæ.

℞.—Extract. nucis. vomic. gr. x.
Mucilag. g. arab. ℥i.
Aq. fontancæ ℥vi.
Syrup zingiberis ℥i.—M. Dose, two table-spoonfuls every two hours, in dysentery. (*Hufeland.*)

℞.—Extract. nucis. vomicæ gr. x.
Pulv. ipecac. gr. xv.—M. Divide into fifteen pills. Take one pill every four hours, until its effects on the system are decidedly obtained, in dysentery or paralysis.

RHUS TOXICODENDRON, VEL RADICANS.—POISON OAK—SWAMP SUMACH.

This is a very common shrub in this country, and well known by its property of inflaming the skin to a very alarming extent, simply on coming in contact with its leaves, or even by a close approach to it, in persons who are particularly sensible to its influence. Mr. Van Mons of Bruxelles, has published a chemical examination of this species of rhus. He asserts, that the poisonous exhalation of this shrub is a carbonated hydrogen gas. It contains also a considerable quantity of tannin, some gallic acid, a small portion of green fecula, and a still smaller quantity of gum and resin.

It does not appear that it possesses any very deleterious properties when taken internally. Orfila observes,

that it blunts the activity of the nervous system after being absorbed. Alibert,* however, states that a M. Boullon inoculated himself, in his presence, with the juice of the rhus toxicodendron, with perfect impunity. On the skin, however, its poisonous properties act with great energy. When touched or handled it produces in the course of two or three days very serious symptoms. The skin inflames and swells, being attended with a very distressing burning pain. If the face be affected the eye-lids are so tumefied as to close up the eyes; the whole head is swelled and covered with little blisters containing serum. Sometimes the whole body is enormously swelled and covered with serous vesicles. When the inflammation and swelling have in some degree subsided, the epidermis begins to separate in little squamæ, and an intolerable itching is felt for some days longer. The arterial system, during an affection of this kind, is very considerably excited.†

These symptoms bear a very strong resemblance to those of erysipelas; and it is observed by Mr. Van Mons, that they yield to the remedies commonly employed for the cure of this latter affection. M. Gouan recommends aqua ammonia, diluted in water, as a useful application; but I believe nothing has as yet been discovered more effectual in such cases than the application recommended by the late Professor Barton, namely, an aqueous solution of corrosive sublimate.

The rhus toxicodendron has been a good deal praised for its remediate powers in the treatment of paralysis, herpes, and consumption. M. Dufresnoy, professor of botany at Valencia, speaks in very high terms of its efficacy in these affections. The experience of Ver-

* Elémens de Thérapeutiques, tom. i. p. 452.

† Alibert, Elémens de Thérapeutiques, tom. i. p. 454.

deyen, Koch, Van Baerlem, Rumpel, Burdach, and others is also in favour of its employment in these and other affections. M. Pou, professor at Montpelier, cured a paralytic patient in a very short time with the extract of this plant. M. Gouan was equally successful in curing a young lady affected with hemiplegia. Dr. Alderson relates seventeen cases of paralysis, in all of which this remedy was usefully employed.* In two cases of hemiplegia, the employment of this article was attended with very good effects, in my own practice; and Dr. Ossann has informed me, that in the Polyclinic Institute of Berlin, it has been used in conjunction with G. guaiacum, in paralysis, with unequivocal advantage. In very large doses, it is apt to produce active purging.

The dose of the extract is at first about grs. xx. to be gradually increased until some effects on the system are produced. The powdered leaves are given in the dose of from one grain to ten, three or four times a day.

Formulæ.

TINCTURE.

℞.—Fol. rhois. toxicodend. ℥i.
Spir. vini rectificat. ℥xii.
Aq. fontanæ ℥iv.—M. Digest for six days. Dose, from thirty to sixty drops, three times daily.

℞.—Tinct. rhois. toxicoden. ℥ss.
Tinct. aconit
Tinct. guaiaci. volat. āā ʒii.—M. Take forty drops every three hours.

TELA ARANEARUM.

The spider's web has been long known as a domestic remedy for the cure of agues; and we find it mentioned in the dispensatory of Schroder, published in 1644, as possessing such remediate powers. It is to Dr. Robert Jackson, however, that we are indebted for

* An Essay on the Rhus Toxicodendron, &c. by J. Alderson, M. D.

a more particular and satisfactory account of its powers, and consequently for the attention which it has lately received from the profession. This respectable physician, in a communication published in the Medical and Physical Journal,* states that Dr. Gillespie of Edinburgh had succeeded in curing a very obstinate case of ague by the spider's web, after various other means had been tried ineffectually. He then details his own experience with this substance in the treatment of intermittents, the result of which goes directly and strongly in favour of its remediate powers. "I think," says he, "I may venture to say that it prevents the recurrence of febrile paroxysms more abruptly and more effectually than bark or arsenic, or any other remedy employed for that purpose with which I am acquainted; that, like all other remedies of the kind, it is only effectual as applied under a certain condition of habit; but that the condition of susceptibility for cobweb is at the same time of greater latitude than for any other of the known remedies. The cobweb was rarely given before the subject was prepared by bleeding, emetics, or purgatives."

The more obvious effects of this remedy when taken into the system is to allay irritation, to tranquillize the mind, and to induce easy slumbers. Dr. Jackson declares that the cobweb allays "morbid irritability, and calms irritations both of body and mind, in a degree far exceeding any drug or remedy within the circle of our knowledge." He further observes that the effects which it produces characterize it as powerfully stimulant. When the pulse is quick, frequent, irregular, and irritated, it becomes slow, calm, and regular by its operation. In general the surface becomes relaxed and covered with perspiration. If the pulse is slow, regular,

* Medical and Physical Journal, vol. xxi.

and nearly natural, it generally becomes frequent, small, irregular, and sometimes intermitting. Where languor and depression exist, "sensations of warmth and comfort are diffused about the stomach, and increased animation is conspicuous in the appearance of the eye and countenance." I have taken it very often, and have uniformly found it to produce a calm and delightful state of feeling, succeeded by a disposition to sleep. This accords with the experience of Dr. Oliver of Salem, who found it to produce in himself "the most delicious tranquillity, resembling the operation of opium, and followed by no bad effects."

In consequence of these soothing properties the cobweb has been found an excellent palliative in the advanced stage of consumption.

Dr. Jackson details a remarkable case of asthma, in which the tranquillizing effects of this substance were conspicuously evinced. The complaint was hereditary and connected with malformation of the chest. The patient was unable to lie down in bed from a sense of suffocation, and was obliged to take the little sleep he could get in a half-sitting posture, being supported by pillows. In this distressing condition he one night took twenty grains of the spider's web, and obtained from it a sound and uninterrupted sleep all night, "a blessing to which he had been an entire stranger above six years." The same writer states that he has found it very useful in the spasmodic complaints of females, which resist the powers of ordinary remedies. In chronic hysteria I have employed it with much advantage. I have found it particularly serviceable in women of a relaxed habit of body, accompanied with morbid irritability of the nervous system. In a case which I have at present under my care, my patient derives evident advantage from this article, in combination with the

cyanite of zinc, lately introduced into practice by Dr. Hufeland of Berlin. Dr. Webster* of Boston, adds his testimony in favour of the remediate virtues of this substance. He has found it to produce very good effects in rheumatic headache, asthma, and chronic coughs. He has also derived much advantage from it in allaying the irritation which sometimes attends a mercurial course. He mentions the following remarkable effects of this remedy in an old and infirm asthmatic: "slight but pleasant delirium was produced, and from the report of the persons who slept in the room with him, the effect, though of longer duration, was very similar to that of a dose of nitrous oxide gas; the muscular energy having been exceedingly increased, the patient could not be confined to bed, but danced aud jumped about the room nearly all night: in the morning I found him quietly asleep. No unpleasant symptoms ensued." The same writer observes, that the cobweb is an excellent application to irritable sores.

It is generally given in the dose of five or six grains, repeated every third, fourth, or fifth hour. According to the experience of Dr. Jackson, a dose of five grains produces nearly the same effects as one of twenty.

HYDROCYANIC ACID.—PRUSSIC ACID.

The prussic acid is the most prompt and fatal poison known. When perfectly pure, and brought into contact with a wound, or simply applied to the eye or tongue of an animal, it destroys life almost instantaneously. When diluted, however, to a proper degree, it appears, from some late accounts of its employment in diseases, to be capable of very important remediate applications.

* New England Medical and Physical Journal, new series, vol. iv. p. 218.

The prussic acid, as it is usually prepared for medicinal purposes, is transparent, without colour, of a bland and sweetish taste at first, becoming acrid and hot afterwards. Its specific gravity, at seven degrees of Reaumur, is 0.70583. It reddens the tincture of turnsole slightly. It boils at the temperature of 26° 5′, under a pressure of 0.76^{m}; and at 15° it congeals.* It is so extremely volatile, that when a portion is dropped upon a piece of paper, the part which almost instantaneously evaporates, produces a sufficient degree of cold to crystallize the portion of the acid remaining on the paper. Its odour is strong and characteristic, resembling that of peach-blossoms and bitter almonds. When exposed to light it is soon decomposed, resolving itself into carbonic acid, ammonia, and carburetted hydrogen gas. It is, therefore, necessary to keep it excluded from light, otherwise it will very soon become inert and useless. It is found in a variety of vegetable substances;—in bitter almonds; the kernels of black cherries; in the flowers and leaves of the peach-tree, and particularly in the kernels of the peach, and in the leaves of the prunus laurocerasus. For medicinal purposes it is usually obtained from this latter plant, or from the prussiate of iron.

This acid was discovered by Scheele, in 1780. It was soon afterwards ascertained to be highly poisonous, by Schrader, who found that a few drops, or even its vapour, very speedily killed some birds which he subjected to its influence. Its deleterious properties were afterwards more fully ascertained by the experiments of Ittner, Emmert, Coulon, Robert, Orfila, and more recently by those of Magendie. Ittner poured twelve drops of the acid into the mouth of a middling-sized dog. The animal immediately staggered and fell. His

* Thenard Traité de Chemie, tom. iii. p. 462.

respiration was quickened, and his fæces passed involuntarily. He was seized with violent opisthotonos, and died in about an hour after the acid had been given him. The effects, however, of the highly concentrated acid are still more violent; and, indeed, truly frightful. Magendie states,* that on plunging into the throat of a dog the extremity of a glass tube, that had been previously dipped into a phial containing some pure prussic acid, the animal instantly made two or three long and rapid inspirations and fell dead. Not the smallest trace of sensibility in the muscular organs could be detected after death. In another experiment he applied an *atom* of the acid to the eye of a dog, "and the effects were as sudden and as fatal as the preceding experiment." "In short," says Magendie, "the prussic acid, prepared according to M. Gay-Lussac, is, without doubt, of all the known poisons, the most active and the most promptly mortal. Its deleterious and powerful influence permits us to believe what the historians have related of the criminal talent of Laucustus; and render the accounts of those extraordinary and sudden cases of poisoning, so frequent in the annals of Italy, less marvellous and incredible."

The action of this acid appears to be immediately directed upon the nervous system. The excitation, however, which it produces in the system, is extremely transient, inducing almost immediate debility and torpor. When the dose is very large its action is so rapid and intensely energetic, as to cause, like lightning, an almost instantaneous extinction of the vital properties. As a consequence of its power to lessen irritability and sensibility, it diminishes the action of the heart and arteries, though in general this effect is not conspicu-

* Journal of Science and the Arts, for 1818, No. viii.

ously manifested, unless the dose be excessive. Dr. Thomson, in a letter to Dr. Granville, observes that he has never seen its sedative effects preceded by an increase of the action of the heart and arteries, "a circumstance which distinguishes it from all other substances belonging to the class of narcotics." It does not appear to be capable of producing any inflammation in parts to which it is applied. Bitter almonds, however, whose active principle consists of this acid, inflame the stomach when swallowed.

It is only of late that this acid has been extensively employed for remediate purposes; and if the accounts we have had of its good effects be not greatly exaggerated,—a suspicion which can hardly be admitted, as they proceed from sources so respectable and various, it is undoubtedly entitled to very great attention.

Bitter almonds and lauro-cerasus, both of which owe their active properties to the prussic acid they contain, were formerly employed as remedies in the cure of intermittents. Hufeland states that he has known two or three bitter almonds, swallowed a short time before the paroxysm, sufficient to prevent its accession.* Bergius,† also, says that cases of ague have been cured by the bitter almond, after having used the cinchona and other remedies ineffectually. MM. Duvignon and Parent,‡ of Paris, state that during the first invasion of the allied army in 1814, a young English physician attached to the Russian imperial guards, effectually treated tertian intermittents with Scheele's prussic acid, combined with other substances, in strong doses.

Substances containing the prussic acid, as well as the acid itself, have also been employed successfully in the

* Bibliothèque Med. tom. viii. s. 386.

† Bergius Mat. Med. p. 400.

‡ Medical Recorder, vol. ii. p. 510.

cure of some nervous disorders. The aqua lauro-cerasus, which is but a very diluted form of the prussic acid, has been much recommended by Hufeland,* Thomasen, Thaussen, Baillie, Wurzer, and others, in mental disorders. Dr. Oliver, of Salem, states that in two instances of mania in females, the prussic acid has been of essential advantage.† It has been particularly extolled for its good effects in hypochondriasis depending on disorders of the abdominal viscera, or on onanism. It has also been thought particularly adapted to the cure of mania arising from suppressed excretions.‡

Dr. Shallern asserts that he derived very considerable advantage from the employment of laurel-water in combination with belladonna, in cases of hydrophobia. M. Dupuytren, however, employed the prussic acid in two instances of this hopeless malady, without the least benefit.

A very large mass of testimony has of late been published, which goes directly and strongly in favour of its powers in the treatment of chronic nervous coughs, and phthisis pulmonalis. Magendie was, I believe, the first who employed the prussic acid in diseases of this kind.§ Observing its remarkable property of diminishing general sensibility, without materially affecting the respiration and circulation, he was led to the opinion that it might be advantageously employed in cases depending, as these affections appear to do, on a morbid increase of sensibility. He accordingly prescribed it to a young

* Journal der Practish. Arzneyk, B. ix. s. iii.

† Thacher's New Amer. Dispen. p. 433.—1821.

‡ Duvignon and Parent, in the Med. Recorder, vol. ii. p. 545.

§ Since writing the above I have seen an article in the New England Medical Journal, communicated by B. Lynde Oliver, M. D., of Salem, in which he states that he administered both the distilled water and saturated tincture of lauro-cerasus, in phthisis pulmonalis, as early as 1810, and generally with much advantage.

lady who had been affected with a distressing, dry, short cough for above eighteen months. He ordered her "six drops of Scheele's prussic acid, diluted with three ounces of a vegetable infusion, to be taken by spoonfuls every two hours," and in four days her cough disappeared entirely. He states that he afterwards employed the prussic acid in numerous instances of nervous and chronic cough, and always with the greatest success. Having found it thus efficacious in the treatment of dry and convulsive cough, he resolved on trying it in consumptive cases. The result of his experience, as given in his first report, is that out of fifteen persons affected with pulmonary consumption, he invariably found the prussic acid, administered in small and repeated doses, "to diminish the frequency of the cough, moderate and render more easy the expectoration, and lastly to procure the patients some sleep at night, without any colliquative sweats." In 1820, Dr. Magendie published a small work "On the Use of Prussic Acid in the Treatment of Diseases of the Breast, and particularly in Phthisis Pulmonalis," in which much interesting evidence is offered, in addition to what he had already given, concerning the efficacy of this substance in consumption and other pulmonary affections.

Dr. Granville, too, in a late work on the medicinal uses of the prussic acid, adds his testimony in favour of its powers in pulmonary and other diseases.* He relates seventy-nine cases of different diseases, all of which were cured or relieved by this potent article. A considerable number of these were phthisis in the early stages of the complaint, and a few of them were already far advanced. We have also some observations from Dr. Scudamore, which strongly indicate the

* Further Observations on the Internal Use of Prussic Acid. London, 1820.

good effects of this remedy. This respectable physician prescribed the acid in the dose of ten drops a day to two young patients labouring under all the usual symptoms of confirmed phthisis. They both had a fatiguing cough, frequent pulse, were much emaciated, debilitated, and harassed with night-sweats and copious purulent expectoration; they also had that peculiar form of the nails which usually accompanies these symptoms. These two patients were perfectly cured by the employment of the acid.

In the practice of Professor Macneven, of New York, this remedy has been known to produce excellent effects in incipient phthisis. "I have used the prussic acid," says he, "with great advantage. It almost always removes cough, which accelerates and favours tubercular inflammation in predisposed habits, and thus in many cases prevents the disease."*

I have employed it in five cases of phthisis. In two of these the cough, night-sweats, and hectic symptoms were considerably relieved. In two I observed no obvious advantages from its use, and in one case it did manifest harm, by the excessive prostration which it produced.

In the cure of hooping-cough this new remedy appears, from ample testimony, to be very efficacious. Haneman recommends the aqua lauro-cerasus as exceedingly useful in this distressing affection. Dr. Oliver declares, that of all the various medicines which he has employed, he has never found one which operated so suddenly in hooping-cough; and Dr. Granville asserts, that in no case need hooping-cough be suffered to proceed longer than eight or ten days, if timely and cautious recourse be had to the prussic acid. We have, moreover, the evidence of Dr. John

* American Medical Recorder, vol. iii. p. 574.

Elliotson, who has recently published an interesting work on the prussic acid, in favour of the good effects of this remedy in the present disease. He has also employed it successfully in a case of chorea; and in pyrosis and various other diseases of the stomach, he considers it a very valuable remedy. He does not, however, offer any thing which goes to confirm the accounts that have been given of its curative powers in phthisis; and he fears that it must be added to our list of remedies that have been fruitlessly applied to the cure of this disease.

It has also been prescribed with advantage in asthma. Dr. Granville states, that he has known it afford signal relief in this affection. Dr. Oliver also speaks of it as a valuable remedy in this disease.*

In chronic rheumatism the prussic acid has been employed with evident advantage. Dr. Coates,† of this city, in a statement of the result of the use of the prussic acid in the Pennsylvania Hospital, in the summer of 1819, observes, that "in two cases of severe chronic rheumatism, and in one of mania, the prussic acid was eminently serviceable, and in combination with subsidiary means effected permanent cures."

Dr. Magendie prefers the pure prussic acid, as prepared by the process of Gay-Lussac, and diluted with six times its volume of distilled water, or eight times its weight of the same, to that prepared by Scheele's process, which is not sufficiently uniform in its power, on account of the liberty which the process leaves to the preparer. The difficulty of procuring this acid of an uniform strength, and the still greater difficulty of preserving it from deterioration, has hitherto been a very great objection to its employment in practice. It is

* New England Medical Journal.

† American Medical Recorder, vol. iii. p. 145.

therefore very desirable that so valuable and powerful a remedy as this is should be obtained in a more permanent form than the aqueous solution, which decomposes by light, by air, and by the water itself. Professor Thomas Cooper has introduced a preparation that promises to answer this purpose. The following is his process: into strong rectified alcohol, surrounded by ice, throw a quantity of the prussic acid gas, obtained from the prussiate of mercury. One ounce of such alcohol will, at 32° of Fahrenheit, absorb all the gas that can be procured from four hundred grains of prussiat of mercury slightly moistened with about fifty or sixty drops of muriatic acid, and exposed to a gentle lamp-heat in a small retort. Not more than two drops of this acid can be given in a day in doses of one-sixteenth part of a drop.*

Formula.

℞.—Acidi. hydrocyanici gtt. viii.
G. arab.
Sacch. alb. āā ʒii.
Aq. fluvialis ℥viii.—M. Dose, a table-spoonful three or four times daily.

* The following very interesting remarks and experiments on the effects of hydrocyanic acid and its counter-poisons have been lately published by John Murray, Esq., F. L. S. M. W. S., &c.

"I had always found, that the violent headache which sometimes occurred in preparing hydrocyanic or prussic acid, was relieved and removed by ammonia, which induced me to think that the antidote to that acid, and virulent and formidable poison, might be found in ammonia.

"A small portion of hydrocyanic acid was given to a healthy young rabbit, which proved fatal in ten minutes. Soon after its administration, the head declined on one side, violent spasms supervened, while the eye lost its lustre, and the animal died in dreadful convulsions.

"On dissection after death, the lobes of the lungs appeared paler than usual, coagulable lymph was found lining the trachea, as in cynanche trachealis, and the stomach was found inflamed near the pylorus. The brain was not examined.

"The muscular fibre was still excitable by voltaic agency, but the excitability soon declined.

"A drop or two of hydrocyanic acid on the head of a frog soon proved fatal. The colour promptly changed to an unwonted paleness.

"The sciatic nerves of the prepared limbs were moistened with hydrocyanic acid, but no suspension of the voltaic excitement supervened. It was accompanied by a tremulous movement of the muscular fibre, connected with the lines of the nerves: and this spontaneous irritability seemed increased by the application of alcoholic solution of iodine.

"It is a singular fact, that not unfrequently an alcoholic solution of iodine dropped on the muscular fibre of a frog, excited phenomena similar to the action of the voltaic apparatus. It seemed also to renew excitability when the susceptibility had declined or was lost.

"When the symptoms were verging to a fatal issue in a frog, a drop or two of ammonia on the head effectually restored the animal.

"A greater quantity of hydrocyanic acid was given to a young rabbit than proved fatal in the cases detailed. Ammonia was occasionally applied to the mouth on a sponge. The animal exhibited no unhealthy symptom whatever.

"A considerable quantity of hydrocyanate of ammonia with excess of base was administered to another rabbit, but without any deleterious effect.

"Half a drachm of hydrocyanic acid was given to a healthy young rabbit. The effects were prompt. Respiration became laborious and difficult, with a grating in the throat, the eye lost its brilliancy, the head dropped, it raised a sharp cry, and was convulsed. Strong ammonia was dropped into the animal's mouth, and it was repeatedly moistened with a sponge dipped into ammonia. It almost instantly revived, and even licked repeatedly the finger which sometimes applied the ammonia, apparently quite sensible of the instant and continued relief afforded. The animal effectually recovered. Its lips were excoriated by the ammonia.

"Conscious of the complete antidote of this formidable poison found in ammonia, I took a quantity of hydrocyanic acid sufficient to produce violent headache, stupefaction, &c., but diluted ammonia afforded me instant relief. I occasionally applied it to the olfactory organs, and bathed the forehead.

"Since hydrocyanic acid has been introduced into our pharmacopœia, and employed in phthisis pulmonalis, and accidental poisoning may be anticipated, it is of much moment to know an effectual barrier to its virulence; and such is my complete conviction of the antidote, that I would feel no hesitation whatever in taking a quantity sufficient to prove fatal, provided there stood by a skilful hand to administer the remedy."

CHAPTER X.

II. *Medicines that Increase and Equalize the Nervous Energy.*

ANTISPASMODICS.

Dr. Cullen, on entering into the general consideration of this class of remedies, says: "This is the most difficult subject that has occurred to me:" and it must be confessed, indeed, that there is no object of the materia medica surrounded with greater obscurity than the modus operandi of antispasmodics.

Spasms occur under such a variety of circumstances, and in such opposite states of the system, that almost every article in the materia medica may, under peculiar circumstances, act as an antispasmodic. Thus spasm may depend on general debility, in which case tonics and general stimulants are serviceable. On the other hand, spasm may also proceed from, or at least be attended by, a plethoric condition of the system, as is sometimes observed in hysteria, and then we derive advantages from bleeding. Thus too, spasm very commonly arises from gastric irritation, in which case we resort to emetics and cathartics as the best antispasmodics. But although remedies of this kind may occasionally produce antispasmodic effects, yet they do this in an indirect manner; that is, by removing either the debility or the plethora, or the irritating cause upon which the spasm depends, and not by any indirect influence over irregular or morbid muscular contrac-

tion. They are, therefore, not to be ranked with the antispasmodics strictly so called, any more than venesection is to be placed with the stimulants, because, in certain states of congestion, its employment produces strength and fulness of the pulse.

There are, however, substances which seem to exercise a more direct influence over spasmodic muscular motion. Of the modus operandi of these medicines we know but very little; nor can the utmost ingenuity hope to remove the veil which covers this subject, until the physiology of muscular motion and nervous influence shall be better understood. All that can be said, with any degree of plausibility, on this point is, that as the functions of the muscular system are not only under the influence, but probably directly dependent on those of the nervous system, we may infer that the remedies which calm the irregular actions of the former must do so by their action on the latter.

ASSAFŒTIDA.

This is the inspissated milky juice of a perennial plant, indigenous to Persia, and known to botanists by the name of ferula assafœtida. It is brought to us in dry, hard pieces, somewhat unctuous to the feel, of a brownish, or reddish colour, interspersed occasionally with little shining tears of a whitish hue. Its odour is strong, fœtid, and alliaceous, and its taste bitter and acrid. According to Pelletier, 100 parts of assafœtida contains 65 parts of resin, 19.44 parts of gum, 11.66 of bassorin, 3.60 of volatile oil, with traces of supermalate of lime. In addition to these ingredients, Mr. Brandes found in it a large proportion of saline matters.

Assafœtida is one of our most penetrating nervine stimulants. Taken in a large dose it excites a more

lively flow of spirits, increases the action of the heart and arteries, and induces vertigo. It also acts as a gentle laxative; but its long-continued use is said to weaken the muscular power of the intestines.* I have, however, never observed such an effect from the use of this remedy, although I have frequently employed it for a long time and in large doses. It possesses considerable powers as an expectorant, and may be very usefully employed in cases where we wish to promote expectoration, and at the same time stimulate the general system, or allay spasms or nervous agitation.

As a palliative in nervous diseases, assafœtida is one of our most efficacious remedies. To allay hysteric symptoms its employment is extremely common; nor do I know any other medicine more promptly beneficial in such cases than this one.

It may also be advantageously employed to obtain temporary relief in hypochondryasis. Independent of its cheering influence in this affection, it is useful by awakening the dormant sensibility of the system to the action of other remedies.

In the advanced stages of typhus, when the system is much debilitated, and subsultus tendinum, tremor, and slight delirium exist, assafœtida, given in combination with other and more permanent stimulants, is often of very great service.

It may also be employed with much benefit in all spasmodic affections of the alimentary canal, unattended by any active inflammation in this part.

Much was formerly said of its employment in asthma and croup, and there can be no doubt that it may frequently afford much relief in this disease. In the latter

* Burdach's Arzneimittellehre, B. iii. s. 322.

disease, Miller recommends in strong terms a mixture* of this substance in powerful and repeated doses. In the advanced stage of this affection, when by a successful antiphlogistic treatment, the inflammatory condition of the system and of the parts affected have been considerably subdued, I have known the assafœtida to do much good in relieving the dryness and hoarseness of the cough, and establishing a more healthy secretion from the lining membrane of the bronchia. In hooping-cough, also, assafœtida will occasionally afford considerable advantage. I have, in a few cases, united this remedy with antimonials, so as to excite vomiting after a few doses had been taken; and it appeared to me that the relief obtained was both more complete and more permanent than is usually derived from emesis alone.

In spasmodic pains of the stomach and bowels from indigestion, assafœtida is a remedy of very considerable importance.† In my own person I have found it particularly advantageous for the relief of such symptoms when combined with small doses of opium. Richter states, that a combination of assafœtida and ox-gall is one of the most effectual remedies we possess for correcting that morbid condition of the stomach which favours the formation of acid. "Some patients," says he, "are constantly tormented with acid, eat what they may, and even though they take nothing but animal food. In such cases equal parts of assafœtida and ox's-gall are of so great use, that I can now, from experience, recommend them almost as a specific."‡

Assafœtida has also been recommended as an excel-

* ℞.—G. assafœtida, ʒii. aq. ammoniæ acetat. ℥i. aq. pulegii. ℥iii. Solve. Dose, a table-spoonful every half hour to a child two years old.

† Cullen's Mat. Med. article Assafœt.

‡ Medical and Surgical Observations, p. 191.

lent remedy in chorea, occurring about the age of puberty in females. For this purpose it should be given in large doses. Gunther states, that he succeeded in curing a case of this kind, by the use of this article, after many other approved modes of treatment had been ineffectually resorted to.

In cases of habitual costiveness, assafœtida often acts as a useful and invigorating aperient. It is particularly serviceable when the torpor of the bowels is connected with nervous symptoms. In such cases this article may be very advantageously combined with the compound extract of colocynth.

Assafœtida has been highly recommended in the treatment of caries.* Given in large and frequent doses it is said to promote the exfoliation of the dead parts, and to improve the discharges. It is, however, of more unequivocal advantage in the cure of old and ill-conditioned ulcers; and it appears to be more especially efficacious in cases that are attended with a scrofulous or rheumatic habit of body.†

Assafœtida is given either in substance, emulsion, or tincture. The dose in substance is from gr. iii. to ℈i. or even more, according to the urgency of the symptoms. An emulsion of two drachms of assafœtida, two yolks of eggs, eight ounces of water, and one ounce of syrup, is to be given in the dose of one or two tablespoonfuls, pro re nata.

Formulæ.

℞.—G. asafœtid. ʒi.
— galban.
— myrrh, āā. ʒss.
Castor gr. xv.—M. Divide into two grain pills. Dose, from three to six, three or four times daily, in hysteria.

* Smucker's Chirurgische Scriften. See also C. L. Smalz Beobachtungen über die guten Würkungen des stinkenden Asants, by drusen-und knochengeschwülsten, auch bey dem Beinpasz. In Loder's Jour. f. Chir. ii. Bd. iv. st. No. 7.

† Burdach's Arzneimitt. Lebi. B. iii. p. 327.

℞.—G. asafœt.
— galban.
— myrrh, āā. ʒi.
Castor
Camphor, āā. ℈ss.
Bals. Peru, q. s.—M. Divide into two grain pills. Dose, from four to ten pills.

℞.—Asafœt. ʒii.
P. ipecac.
P. opii, āā. gr. viii.—M. Divide into three grain pills. Dose, from four to ten, in spasmodic pains of the stomach and bowels.

GALBANUM.

This substance is the inspissated milky juice of a perennial plant indigenous to Africa, and known to botanists by the name of bubon galbanum.

Galbanum is a tenacious substance, of a whitish colour when recent, changing to a yellowish red when old. When broken it presents a variegated appearance from the number of white tears with which it is interspersed. Its taste is bitter and acrid, and its odour fœtid and strong.

One-fourth of its weight will be dissolved if triturated with wine, water, or vinegar. To effect a permanent suspension in these fluids the addition of half its weight of some mucilage, or the yolk of eggs, is necessary. The best solvent, however, is a mixture of two parts of rectified spirits and one of water; this will dissolve all but the impurities of this substance. According to Pelletier, 100 parts of galbanum contains 66.86 parts of resin, 19.28 of gum, 6.34 of volatile oil, with traces of supermalate of lime.

Galbanum has been a good deal recommended in hysteric affections; it is said to be peculiarly adapted to cases of this kind attended with a relaxed state of the system, and a deficiency or a suppression of the catamenia. I have never employed it in spasmodic

diseases. But in one case of habitual asthma, attended with a troublesome cough, I have found it exceedingly useful.

In spasmodic and flatulent colic, galbanum will often afford very considerable advantage. For this purpose I have known it to be combined with the ol. ricini, with very good effect. In addition to its antispasmodic virtues, it possesses no inconsiderable expectorant powers. In the latter periods of pneumonia, attended with considerable cough, and a difficulty of expectorating the tough mucus of the bronchia, a solution of galbanum in vinegar of squills is said to act very beneficially.

It has been thought to possess very considerable deobstruent and discutient properties. It enters into the composition of Smucker's visceral pills, so highly recommended by Richter and others in the cure of gutta serena.*

Externally galbanum is applied to discuss indolent tumours. Arnold (Hufeland's Jour. B. 26) and Kopp (Medical Observations, p. 104), speak very favourably of the employment of the tincture of galbanum in chronic inflammation of the eyes. A thin compress of linen to be saturated with the tincture, and applied over the eyes over night. I have resorted to this application in a few cases with very manifest advantage.

The sum is given in the form of pills in the dose of from ℈i. to ʒi. Dose of the tincture is from ʒi to ʒiii.

* The following is Smucker's formula:

℞.—G. galbani,
G. sagapeni,
Sapon. venet. āā ʒi.
Pulv. rhæi. ʒss.
Tart. emet. in aq. font. q. s. sol. gr. xvi.
Succ. liquiritæ ʒi.—M. Finat. pil. gr. i.
Sumat quotid. No. xv.

GUM AMMONICUM.

According to Wildenow, this is the inspissated juice of the *heracleum gummiferum*, an umbelliferous plant, indigenous to the interior parts of Africa, the desert of Barka, and the western regions of Egypt. Externally this substance is of a brownish, and internally of a whitish, reddish, or deep yellow colour. It has a faint balsamic odour; its taste is nauseous, at first sweet, soon becoming bitter and acrid. It is composed of gum, resin, gluten, and some volatile oil. Neither water nor alcohol dissolve it completely. In vinegar, æthereal oils, and nitric æther it is, however, perfectly soluble.

The antispasmodic powers of this substance do not appear to be of much importance. In spasmodic colic it may, however, be given with much advantage. In this affection, when given in large doses, it not only tends to allay the spasm of the intestines, but also to promote their discharges. In chronic hysteria, connected with a cachectic state of the system, and a deficiency of the catamenial discharges, it is very advantageously combined with tonics, and particularly with chalybeates.

This substance has been thought to possess very important deobstruent properties. It has, accordingly, been much recommended by the German physicians in obstructions of the glandular viscera of the abdomen, and for the cure of such affections as are more or less intimately connected with derangement of those organs. Richter has employed this remedy in combination with other medicines with much success, in the cure of gutta serena; a disease which appears to be not unfrequently dependent on functional disorder of the abdominal viscera. "Experience," says this eminent writer, "confirms me more and more in the opinion that the cause

of gutta serena is most frequently seated in the abdominal viscera, and daily justifies me more in recommending the use of deobstruent visceral medicines. I can affirm, that I have frequently performed a complete cure in cases where I hardly expected it, and in some where the disease had actually continued for several years.*

G. ammoniac has also been used in hypochondriasis, chronic rheumatism, caries, ulcers, and cutaneous eruptions. Richter states that in incipient scrofulous consumption attended with a languid and irritable state of the system, he has used this gum, in conjunction with tart. antimony and belladonna, with marked advantage. He administered it according to formulá No. 1, given below.

G. ammoniacum has also been particularly recommended in hydropic affections, more especially anasarca, when attended with a feeble and relaxed habit of body. In cases of this kind, it may be very advantageously administered in union with squill and minute portions of calomel. As an external remedy, it enters into the composition of a variety of plasters; and forms an excellent application to discuss chronic and indolent swellings and glandular indurations. For this purpose it is softened by vinegar, or the vinegar of squills, and spread on leather.

Of its expectorant powers, which are very considerable, I shall speak particularly when I come to treat of that class of remedies.

The most agreeable way of exhibiting ammoniac is in the form of an emulsion. ʒii. of this substance must be triturated with the yolk of an egg or ʒss. of gum.

* He recommends the following pills:

℞.—G. ammon. assafœtid. sapon. venet. rad. valerian. summitat. arnic. āā ʒii. tart. antim. gr. xviii. pil. pond. gr. ii. quarum sumat ter quotid. No. xv.

arab. gradually adding ℥iv. of water. The dose of this is one or two table-spoonfuls every two or three hours. It is also conveniently given when dissolved in the liquor ammonii acetat. Two drachms of the former may be dissolved in three ounces of the latter.

Formulæ.

No. 1.

℞.—G. ammoniac.
— galban
Extract. cicut. āā ʒi.
Tart. antimonii gr. x.
Pulv. herb. belladon. ʒss.
Conserv. rosar. ʒi.—M. Divide the mass into three grain pills. Dose, six pills three times daily.

No. 2.

℞.—G. ammoniac. ʒiss.
Pulv. rad. senegæ ʒii.
Sulph. aurant. antim. ʒss.
Rad. scillæ gr. xv.
Mucilag. q. s.—M. Divide into three grain pills. Take from three to six pills three times daily, in chronic catarrh, &c.

MUSK.

This substance is produced by a quadruped of the ruminant kind, called *moschus moschiferus*, a native of Thibet, Tartary, China, Siberia, and the kingdom of Tangut. The fluid which forms this substance is secreted principally by the male; that which is obtained from the female possesses but little odour. It is secreted most copiously by the animal during its periods of venereal incalescence.

The bag in which this secretion is formed is situated immediately behind the umbilicus. It is about three inches long and of an oval shape, having one side convex and the other flat. The musk comes to us in round thin bladders, covered with light brown hairs, of the size of a pigeon's egg. It consists of small grains of a

dark brownish colour, having a somewhat unctuous feel. Its odour is very peculiar, diffusive, and durable, "and it has the curious property, when added in minute quantity, to augment the odour of other perfumes, without imparting its own." Its taste is bitter. It contains resin combined with volatile oil, a mucilaginous extractive matter, minute portions of albumen, gelatine, muriate of ammonia, and phosphate of soda.

Ætius is the first who mentioned this substance as an article of the materia medica. Since his time it has been generally regarded as a very important remediate article. It is undoubtedly one of the most diffusive, penetrating, though fugacious stimulants we possess. It acts particularly on the nervous system, giving a lively impulse to its powers, and a temporary exaltation both to the mental and corporeal energies. It elevates the pulse without increasing the heat of the body.

Cullen thought it the most powerful antispasmodic we possess, and there appears to be no reason to think that, in this respect, he has estimated its powers too highly. In all spasmodic affections it has accordingly been much employed, and its effects in this way have often been exceedingly useful. Dr. Cullen relates the case of a gentleman affected with spasm of the pharynx, preventing deglutition, and almost respiration. This case was effectually relieved by this remedy, after a very great variety of other medicines had been used abortively. Dr. Owen relates a striking example of the efficacy of musk in an obstinate convulsive affection of a young lady.* Dr. Hillary speaks favourably

* This case occurred in a young lady, who, having received a slight electric shock from a charged vial, felt, in a few hours after, slight convulsive motions, which recurred once or twice a day. The convulsions gradually increased in violence, until they became very alarming. "Her

of its powers in the treatment of tetanus, as it occurs in hot climates.* Dr. Richard Huck, also, adduces strong testimony in favour of its remediate effects in this disease. He gave it to the extent of half an ounce, with a drachm of opium, in the course of twenty-four hours, and by this treatment cured a considerable number of tetanic patients.†

Dr. Wall states that he found this remedy highly efficacious in convulsive hiccups, given in the dose of ten grains.‡ When given in doses under six grains, he never saw it produce any perceptible advantage.

In spasmodic asthma, as well as in spasmodic croup, musk is a remedy of very considerable value. In the latter affection especially, its beneficial effects are often prompt and decisive. Hufeland, indeed, regards the musk as almost a specific in this malady; and the testimony of Harless, Schaffer, and Wichmann, is equally favourable to its usefulness in this complaint. In hysteric convulsions, prompt and decided relief may sometimes be derived from the use of musk, either by

fits always began with a disagreeable, and rather a painful sensation at her stomach; almost at the same instant her mouth and all her features became distorted. Her head was suddenly and violently drawn down to her breast, and the next moment backwards. Her legs, arms, and, in short, every muscle of her body, at one time or other of the fit, seemed to be violently agitated, and became spasmodically contracted. Her paroxysm used to continue ten or fifteen minutes, at the decline of which, as if nature was quite exhausted or overcome, her muscles became at once relaxed, and she fell into an hysteric fit of crying, which was succeeded by a comfortable sleep." After oleum succini, with small doses of musk, valerian, opium, bark, steel, cold-bath, æther, castor, and the fœtid gums had all been tried ineffectually, he ordered her half a drachm of musk, to be taken every hour. "It was no sooner in the stomach, than the fit, at the beginning of which the first dose was taken, began to abate, and in a minute or two entirely went off. In four days she was entirely free from the disease.—*Med. Observat. and Inquir.* vol. iii. p. 186.

* Cullen's Materia Medica.

† Medical Observations and Inquiries, vol. iii. p. 330.

‡ Philosoph. Trans. No. 474.

itself, or in conjunction with opium or assafœtida. In eclampsia from nervous irritation, unattended with much sanguineous determination to the head, much benefit may sometimes be obtained from full doses of this antispasmodic. In the epileptic variety of this affection, however, that is, when the face is flushed, and the vessels of the head turgid, all stimulating remedies ought to be carefully avoided. Prompt and copious blood-letting is indispensable in such cases.

Its powers in the cure of mania, though recommended by several writers of high respectability, are more doubtful. In hysteric mania I have seen it given in one case with evident advantage; though its beneficial effects were but temporary.

From its antispasmodic powers it has, indeed, been employed in every variety of spasmodic disease:—in subsultus tendinum, epilepsy, spasmodic colic, spasms of the stomach, cholera, cynanche trachealis, asthma, and even in hydrophobia. Sachse declares, that in later stages of croup, he has employed this article with great advantage. Schuter administered it in conjunction with calomel in this affection; and Albers (De Trachitide infant, &c. p. 97) states, that he derived signal advantage in the advanced period of the disease, attended with much prostration, from the use of a mixture of musk, calomel, and kermes mineral. In bronchitis, also, after the inflammatory symptoms have been subdued, and there is much prostration, musk will often afford material benefit. In the erysipelas of new-born infants, this article has been used with decided advantage by Renard (Hufeland's Jour. vol. xxii. p. 87) and by Lutzelberger (Ibid. vol. xxxv. p. 119.)

Berger, a Swedish physician, recommends musk as a highly efficacious remedy in hooping-cough. He gave it to children in doses of fifteen grains every six

hours, and he asserts, that the fits of coughing were very generally prevented after six or eight doses had been taken.

In gout the good effects of this remedy are much extolled by Pringle and Cullen. "In another disease," says the latter, "I can vouch for the powers of musk, and that is in several circumstances of gout." When the gout falls upon the stomach, musk, according to this writer, is an invaluable remedy. In retrocedent gout, affecting the stomach, lungs, or head, large doses are said to give very speedy relief. Having never used it in this disease, I can say nothing either for or against its employment.

In the advanced stage of typhus, when great debility, subsultus tendinum, tremors, hiccup, delirium, pale urine, pale and cold skin, and a frequent, small, and corded pulse are present, musk is one of our most valuable remedies. It is also a very useful medicine in the typhus stage of the exanthemata, as well as in the latter stages of peritonitis, enteritis, and pneumonia, when typhoid symptoms supervene. Schmidt, a very respectable German writer, says that musk is particularly useful in the typhus of habitual drunkards.

Musk is said to afford much relief in the morbid vigilance which sometimes attends hypochondriasis. It has also been recommended in vertigo unconnected with any evident fulness of the cerebral vessels. This remedy has been employed with advantage in combination with opium or ammonia, to check the progress of mortification.*

Musk is generally given in substance, in doses of from six to thirty grains, repeated according to cir-

* Observations on Gangrenes, Mortifications, &c., by C. White, F. R. S., 1790.

cumstances. It may also be exhibited in the form of a julep.*

There is an article made with the oil of amber and nitric acid, which having nearly, if not altogether, the powers of musk, has received the name of artificial musk. It is made by pouring three and a half drachms of nitric acid on one drachm of ol. succini, and then carefully washing the product. This substance appears to be nearly equal in all respects to the natural musk, and is given in the same dose. In pertussis it has been highly recommended; and I have, in my own practice, found it decidedly useful in this disease.

Formulæ.

℞.—Moschi ℈i.
Muc. g. arab. q. s.—M. Divide into twenty pills. Dose, from three to six every hour.

℞.—Moschi gr. x.
G. assafœtid. gr. xv.
Extract hyoscyam. gr. iii.—M. Divide into ten pills. Dose, from two to four every four or six hours, in chronic hysteria, or hypochondriasis.

℞.—Assafœtid.
G. guaiac.
Extr. valerian āā ʒi.
Moschi
Carbonat. ammon. āā gr. x.
G. opii gr. v.—M. Divide into three grain pills. Dose, two to three pills every two or three hours, in hysteria.

CASTOR.

This substance is obtained from a small animal found in Canada, Poland, Russia, Siberia, and the north of Germany, &c., and known to naturalists by the name of *castor fiber*. Near the anus of this animal, there are

* ℞.—Mosch. ʒii.
Sacch. albi. ℥i.
Pulv. g. arab. ʒii.
Aq. font. ℥vi.—M. Dose, a table-spoonful every two or three hours.

four small membranous bags, two of which are principal, and the other two accessory. These bags contain a fluid which thickens on being exposed to heat, and forms an unctuous concrete substance. It is this substance which forms the castor.

The castor has a brownish black colour, possessing a peculiar penetrating, disagreeable odour, and a taste somewhat bitter and sharp. The best castor is brought from Russia and Poland; it comes to us in large black bags, and has a very strong odour. It contains volatile oil, resin, mucilage, extractive matter, iron, and small portions of the carbonate of potash, lime, and ammonia. It contains, also, according to the analysis of Laugier, a small portion of benzoic acid.

It is said that castor manifests less activity in males than in females. Alexander (Med. Eperim. and Observat.) took two drachms of it, without experiencing any other effect from it than disagreeable eructations; and Joerg (Material. zu einer kuinft. Heilmittell. ect. p. 274) noticed the same result, in some experiments made with it on himself. Richter observes, that it exerts a much more decided influence on the uterine system than musk. In general, its tendency to excite the ganglionic system of nerves is very considerable, although on the spinal and cerebral system, its effects are extremely slight. In torpor and functional derangement of the abdominal and pelvic viscera, castor, when employed in full doses, sometimes produces excellent effects.

Castor was formerly esteemed as one of the most active articles of this class of remedies. Its reputation, however, as an antispasmodic, does not seem to be considerable at the present day. It was at one time regarded as possessing narcotic properties, but this opinion appears to be entirely without foundation.

In combination with assafœtida and æther, I have very frequently employed it in hysteria. I have, also, occasionally given it by itself with considerable advantage in hysteric affections. To derive any advantage from it, however, it should be given in very large doses. Instead of giving from thirty to sixty drops of the tincture, as is commonly directed, I generally administer from two to three tea-spoonfuls of it at a dose. It is particularly applicable in cases of hysteria, attended with severe spasmodic pains in the abdomen, or region of the uterus. In cases of this kind it may be very advantageously administered in union with laudanum. It is to be observed, however, that in some individuals, particularly in delicate and irritable habits with a tendency to febrile irritation, castor, even in moderate doses, is apt to give rise to very unpleasant symptoms, such as oppressed breathing, dryness and heat of the skin, flushed face, and anxiety in the region of the heart. In chronic hysteria, attended with a leucophlegmatic or chloratic state of the system, I have known great benefit to be obtained from the employment of this article in conjunction with the phosphate of iron.

It often affords considerable relief in spasmodic and flatulent colic. It has also been recommended in asthma, epilepsy, vertigo, and in the delirium of typhus. Burdach speaks well of its employment in irregular labour pains.

Dr. M. Morris, physician to the Westminster Hospital, speaks very highly of the efficacy of this article, in combination with Peruvian bark, in the cure of hooping-cough. He gave eight grains of castor and fifteen of the bark every four hours, with perfect success.*

Alcohol and proof spirit extract its active properties:

* Med. Obser. and Inquir. vol. iii. p. 283.

water does so but feebly. It may be given in the form of tincture or in substance.

Formulæ.

℞.—Pulv. rhæi
Magnes. carbon. āā ℈i.
Pulv. castor gr. viii.—M. To be taken at once. Richter states that in pains in the stomach and bowels, from acidity, this is a most excellent remedy.

℞.—Tinct. castori ℥ss.
Aq. ammon. ʒii.
Tinct. opii ʒi—M. Dose, from thirty to forty drops.

ALLIUM SATIVUM.

This is one of the most diffusive vegetable stimulants we possess. Taken into the system, its peculiar odour very soon manifests itself in the perspiration, the urine, and the pulmonary exhalation. It contains an acrid æthereal oil, which readily inflames the skin, a viscid gummy substance, a sharp extractive matter, resin, and some salts.*

Garlic does not appear to possess any very important powers as an antispasmodic. It is, nevertheless, sometimes of considerable advantage in cases where expectorant and antispasmodic remedies are indicated. It is accordingly recommended in spasmodic asthma; and in pertussis and croup it is much in use as a domestic remedy. It cannot, however, be employed with safety in these diseases until the inflammatory symptoms have been subdued by depletory measures. In the advanced stage of croup, when the disease has lost its acute character, I have employed it, while practising in the country, with considerable advantage.

In chronic catarrhal affections, attended with a cold, phlegmatic habit of body, this article is often very serviceable.

It is also recommended in the treatment of hysteria,

* Pfaff.

gastric pains from flatulency, and nervous tremors. Dr. Chapman asserts that it is an exceedingly useful remedy in those vertiginous affections which sometimes trouble gouty and intemperate persons.

Its employment in the cure of intermittents, though sanctioned by the authority of Bergius, is of very little consequence. Garlic may be ranked, in this respect, with that host of unimportant articles which have at one time or other been employed to cure agues, and which, though no doubt sometimes serviceable, have not sufficient power to entitle them to any particular consideration.

Lind and Cullen recommend garlic in the cure of scurvy; and Sydenham speaks well of its powers in dropsy.

This substance is a very common domestic remedy for the expulsion of worms. I have known it to be given with decided advantage for this purpose. It is generally administered in the form of a decoction, with milk, on an empty stomach.

VALERIANA.

There is perhaps no medicine which has been more extravagantly praised on the one hand, and neglected on the other, than valerian. In some of the modern works on the materia medica it is not even mentioned, whilst in others its virtues are greatly extolled. That it possesses medicinal powers worthy of very considerable attention is, however, too well established to admit of a reasonable doubt.

The valerian is a perennial plant, indigenous to England and Germany. The root, which is the only part employed for medicinal purposes, is fibrous, with a central knob, and possesses a strong, peculiar, and unplea-

sant odour, and a warm, bitter, and subacrid taste. It contains gum, resin, fecula, extractive matter, and an essential oil possessing the peculiar odour of the root, but is considerably milder in taste.

The root of this plant, when growing on a dry and elevated soil, contains much more essential oil, and is therefore stronger than that which is found growing in low and moist grounds. It loses much of its strength by being kept long, and it ought to be preserved in closed vessels. In its general operation it acts as a stimulant, producing considerable antispasmodic effects. It excites the action of the heart and arteries, promotes perspiration and diuresis, and when taken in very large doses, produces anxiety, vomiting and purging.

For some time after Fabius Columna had cured himself of epilepsy by means of this substance, it was regarded as almost a specific in this disease. A more extensive experience, however, showed that, though not destitute of valuable properties, its powers had nevertheless been greatly overrated. At present, indeed, its reputation in this disease seems to be almost entirely gone. Alibert states, that he tried it with a number of epileptic patients in the hospital St. Louis, and he assures us, that during an experience of six years, he obtained nothing but negative results.* By Quarin, however, this medicine is highly recommended in cases of epilepsy in infants, depending on some irritation; as, for instance, irritation produced by worms in the stomach and bowels; and Burdach† says, that it is particularly applicable in cases of this disease depending on a suppression of the catamenia in young females. Richter cured a case of epilepsy of more than four years duration, in which a great many of the most

* Elémens de Thérapeutiques, &c.

† Burdach's Arzneimittellehre, B. iii. p. 342.

approved remedies had been ineffectually employed by the use of valerian in conjunction with the cajeput oil. He administered a drachm of the former, with three drops of the latter article, four times daily. The famous anti-epileptic powder of Ragoli contains a large proportion of valerian. According to Smelin, it is composed of half a drachm of valerian, three grains of the muriate of ammonia, the same quantity of carbonate of magnesia, and two drops of cajeput oil; but according to Knopf's analysis, it consists of one drachm of valerian, a scruple of powdered orange leaves, two grains of muriate of ammonia, and four drops of cajeput oil (Richter's Arzneimittellehre, vol. iii. p. 20). Richter states, that he has known this mixture to be employed with entire success even in obstinate and inveterate cases of this malady. To be effectual in this complaint, valerian must be given in very large doses.

In hemicranea and vertigo assuming a regular periodical form, valerian has been recommended as an efficacious remedy by Cullen. Dr. Barton, also, adds his testimony in favour of its employment in this affection. Cullen, who placed considerable reliance in its antispasmodic powers, speaks favourably of its use in hysteria and other spasmodic diseases. In chronic hysteria in females of a cold, phlegmatic temperament, valerian in combination with bark is a valuable remedy. I have employed it in such cases with evident advantage. Hill,* who wrote a small book on the employment of this remedy in nervous disorders, speaks very highly of its powers in such complaints. In excessive nervous irritability of the stomach, unattended with inflammatory irritation, the oil of valerian dissolved in

* Valerian, or the Virtues of that Root in Nervous Disorders. London, 1758, 8vo.

sulphuric ether, is, according to Richter, a remedy of great utility. In hysteric or nervous pains of the stomach or bowels, prompt relief may often be obtained by the use of the ammoniated tincture of valerian. (Berends.)

In every form of asthenic fever, valerian may be very generally employed with advantage. In typhus or nervous fever, either in its simple or complicated form, when there exists a spastic condition of the system, characterized by a small, quick, and frequent pulse, a rapid and short respiration, cold and pale skin, trembling and delirium, it has been recommended as very useful, when given in large doses and combined with ammonia or bark. Vaidy considers it preferable to the cinchona in this disease. It appears, however, well established by the extensive experience of M. Chaumeton, that it is, upon the whole, considerably inferior to this latter article.*

A decoction of this root, administered in the form of a clyster, is strongly recommended by Horn, for the relief of tormina and tenesmus. It has also been much employed as a remedy in gutta serena. Both Richter and Smucker speak favourably of its virtues in this disease.

The dose of the powder is from ʒss. to ʒiii. three or four times a day. It may also be given in the form of tincture, in the dose of ʒii.—℥ss. The *etherial tincture* is made by digesting one drachm of the root in an ounce of sulphuric ether. This is an excellent mode of prescribing valerian in hysteric affections. Dose, from twenty to forty drops. The infusion formed of ʒii. of the root to ℥vii. of water, is given in the dose of ℥ii. two, three, or four times a day. Decoction impairs the powers of this article. The ammoniated tincture

* Alibert, Elémens de Thérapeutiques, tom. ii. p. 119.

is a very useful preparation. Its dose is ʒss.—ʒii. twice a day. The oil possesses the active properties of the root. It is given in doses of from six to twenty drops.

Formulæ.

℞.—Ol. valerian ʒii.
Sulph. æther ℥i.—M. Dose from twenty to forty drops.

℞.—Rad. valerian ℥ss.
—— calam. aromat. ʒiii.
Aq. fervid ℥vi.—Stent per 1-4 horæ vase clauso. Colatdein adde: Mixturæ camph. ℥iss.
Sulph. æther ʒii.
Syrup limonis ℥i.—M. Dose, a table-spoonful in the advanced stage of typhus.

SYMPLOCARPUS FŒTIDA.—SKUNK-CABBAGE.

This is a very common plant in the United States. It grows in wet and marshy situations, and is easily recognized by its exceedingly offensive odour, being almost entirely similar to that of the skunk or polecat. The inflorescence which appears in April, consists of a boat-shaped, inflated spathe, variegated with red and yellow spots, acute and incurved at the top, containing an oval spadix, having perfect tetrandrous flowers. The fruit, which consists of the maturated spadix, is a globular fleshy mass, containing large oval seeds. The spathe, with its spadix, is the first part of the plant which appears above ground; the leaves afterwards shoot forth, and bear some resemblance to those of cabbage. This plant is perennial.

The skunk-cabbage possesses very considerable antispasmodic powers. Shœpf, speaking of the root of this plant, calls it "incidens, califaciens, expectorans," and mentions it as useful in phthisical coughs.

As a palliative in the attacks of spasmodic asthma, it is very highly recommended by the Rev. Dr. Cutler and others. I have, in several instances of this dis-

case, derived very considerable advantage from the employment of this remedy. The powdered root, in the dose of from thirty to fifty grains, is to be given during the paroxysm, and repeated according to the urgency and obstinacy of the symptoms. The medicine ought to be continued for some time after the paroxysm has entirely subsided.

Dr. Thacher of Boston, states, on the authority of a correspondent, that two tea-spoonfuls of the powdered root of this vegetable gave very prompt and effectual relief in a case of hysteria, after the ordinary remedies for such cases had been used without benefit. The same writer states that it has afforded much advantage in chronic rheumatism, in wandering spasmodic pains, and in hooping-cough. In chronic cough attended with a cold, phlegmatic habit of body, I have employed the powdered root of this plant with the most decided benefit. In an old man, who had been for many years afflicted with a very troublesome cough and difficulty of breathing, I found nothing to give so much relief as this substance, administered in forty-grain doses once or twice a day.

I was, indeed, much in the habit of prescribing this plant, while practising in the country, in cases of chronic catarrhal and asthmatic affections, and very generally with evident advantage. The seeds are said to be stronger than the root. "In spasmodic affections of the abdominal muscles during parturition, or after delivery, this root has proved an effectual remedy."* The plant should be kept in close stopped vessels, as its active properties seem to be of a very volatile nature. Decoction greatly impairs its virtues.

* Thacher's Dispensatory.

SULPHURIC ÆTHER.

ÆTHERS are the product of the distillation of acids with alcohol. They are limpid, extremely volatile, and light, very odorous and inflammable. The sulphuric æther is most commonly employed in medicine. It is of 739 sp. gr. and boils at a temperature of 98°.

When perfectly pure, this æther consists of oxygen, hydrogen, and carbon; "the rectified æther, however, still contains some water and alcohol, for Lovitz obtained an æther of 632." It is converted into a species of oil by soda and potash, and it robs metallic oxides of their oxygen. It is only partially soluble in water; but it unites in every proportion with ammonia and alcohol. It is a powerful solvent of oily and resinous substances, and "takes up about a twentieth part of its weight of sulphur."

This æther is an exceedingly diffusive stimulant. Its immediate operation is to excite the brain and nervous system, inducing as its secondary effect a considerable degree of stupor, listlessness, and disposition to sleep. Alibert observes, that when taken a long time, and in strong doses, it is capable of destroying the mucous lining of the digestive organs.*

* Dr. Robert Reid, of Dublin, a gentleman of eminence in the profession, in a very interesting paper, "On the Pathology and Treatment of Fever," observes, "æther acts directly sedative upon the spinal system. Some time since, I had an opportunity of seeing the sedative effects of this fluid on the spinal system remarkably evident, in a case of tetanus. The patient had not been able to swallow the smallest quantity of any thing for two days. I proposed that he should get a common enema, with the addition of one drachm of æther. This was done. In a few minutes the patient said he felt a warm glow within; the spasms totally relaxed; he sat up; complained of languor, and ate a bowl of jelly. This fluid is essentially different from alcohol in its effects on the animal economy, though the effect may appear stimulant in the first moment."(*a*)

(*a*) Transactions of the Association of the Fellows and Licentiates of the King and Queen's College of Physicians in Ireland, vol. iii. p. 56.

This is one of the most important antispasmodics we possess for the cure of the hysteric paroxysm. When given in combination with opium, its beneficial effects in cases of this kind are generally prompt and decisive. It may also be usefully employed in various other spasmodic affections. It is capable of affording great relief in asthmatic complaints, or where dyspnœa arises from a spastic condition of the respiratory organs. In such cases the simple inhalation of the æthereal vapour is frequently sufficient to put a stop to, or at least greatly to mitigate, the difficulty of breathing. In catarrhal complaints, attended with difficult respiration, I have sometimes directed the inhalation of this vapour with manifest benefit.

Alibert states, that Pinel and he employed the inhalation of the vapour of sulphuric æther with great advantage in croup. In the spasmodic form of the disease, it often procures prompt and decisive relief, when employed in this way. In general, in all cases of difficulty of breathing, depending on nervous irritation, the inhalation of the vapour of æther will afford speedy relief.

It is also given to check vomiting and sea-sickness; and has been used with advantage in hooping-cough, chorea singultus, nervous headache, and vertigo.

It the treatment of typhus, this remedy has been a good deal employed in combination with other stimulants; and there can be no doubt that it may often act beneficially in this disease, especially when symptoms of spasm attend. It is obvious, however, from the transient nature of its effects, that it ought to be given in very frequently repeated doses; and even under its most advantageous mode of exhibition it can never be regarded otherwise than, at most, but a useful auxiliary in this disease. It has likewise been prescribed for

the cure of intermittents.* Considerable importance has been ascribed to sulphuric æther as a remedy in traumatic tetanus. Gay states, that he employed it in conjunction with the essential oil of cinnamon, in several cases of this kind, with entire success. (Journ. de Med. Sept. 1812.) In some of the cases of tetanus, which occurred after the battle of Austerlitz, the remedy was employed with unequivocal advantage.

Richter states, that he prescribed sulphuric æther in very large doses (amounting at last to a table-spoonful) with complete success in a case of melancholia, caused by onanism. (Med. Chirurg. Obser. vol. ii. p. 128.)

Being the lightest and most evaporable fluid known, it produces, in consequence of its rapid evaporation, a sudden and very great reduction of the temperature of those parts to which it is applied; and hence its external employment is capable of answering very useful purposes. Charles L. Smalz, physician at Pirna, has published some very interesting observations concerning the utility of this article as an external application in strangulated hernia. In two cases of this kind, after all the usual means of reduction had failed, æther was poured on the hernial tumour. From the cold produced by its evaporation, the hernia immediately softened, diminished, and was readily returned.† Many cases have since occurred to other practitioners, in which the application of the æther was found to produce similar good effects.

In rheumatism and gout also, the external application of this remedy has afforded very great relief. We are told by Sedillot, who has published a memoir on this subject (in the Recuiel Periodique de la Societe

* Rochefort, Cours Elémentaire de Matiére Médicale, vol. i. p. 118.
† Alibert, Elémens de Thérap. tom. ii. p. 144.

de Med. de Paris), that the acetic æther is still more decidedly beneficial as an external remedy in rheumatism and gout, than the sulphuric æther.* A mixture of sulphuric and muriatic æthers evaporates with so great a rapidity, as to produce a degree of cold several degrees below O. of Fahrenheit's thermometer. The liquor anodynus Hoffmani, is nothing else than sulphuric æther with the admixture of a small portion of alcohol and oil of wine. The sulphuric æther is liable, according to Gay Lussac, to undergo spontaneous decomposition, when kept a long time without disturbing it; "acetic acid, perhaps some alcohol, and a particular oil, are produced from it."

This article is given in the dose of ʒi—ʒiii. and repeated according to the exigencies of the case.

OLEUM SUCCINI.—OIL OF AMBER.

Amber, which affords this essential oil, is a solid bituminous substance, of a yellowish brown colour, clear and transparent, possessing very little taste or smell. It is dug out of the earth, and found along the coast of the Baltic and Mediterranean. This substance was much esteemed by the ancients, not only for its supposed remediate powers, but also as an ornament worn by the Roman ladies at their public games.

——— stillataque sole rigescunt
De ramis electra novis; quæ lucidus amnis
Excepit et nuribus mittit gestanda latinis.
Ovid. Met. L. ii. 1. 364.

Amber was called electrum by the ancients, from its property of becoming electric on being rubbed.

The essential oil obtained from it by distillation, possesses an acrid pungent taste and bituminous smell.

* Alibert, Elémens de Thérap. tom. ii. p. 144.

It is very sparingly soluble in alcohol. When taken internally this oil evinces considerable stimulating properties; it heats the system and excites the secretions.

The oil of amber has been much recommended in tetanus, hysteria, and other spasmodic complaints. Dr. Rush employed it in a case of tetanus with very decided benefit. In France, a mixture consisting of equal parts of ol. succin. spirit terebinth. and bals. copaiva, has lately been strongly recommended as a remedy in gleet, leucorrhœa, and nocturnal pollutions. The dose of this mixture is thirty drops, gradually increased to sixty, three times daily. Dr. Chapman says it is very useful in pyrosis, especially if attended with spasmodic pains. I have never employed this article in spasmodic affections, and can therefore give no opinion concerning its powers.

Hufeland speaks very highly of the good effects of amber in union with musk, in the cure of gangrene. Lentin also adds his testimony in favour of its employment in this disorder. Liniments, of which this oil forms a principal part, have been used with advantage against fixed rheumatic pains, torpidity, and slight paralysis.

The oil of amber is given in doses of from ten to thirty drops. By the continental physicians it is frequently administered in union with caustic ammonia. Ten or fifteen drops of the oil are put into a glass containing a small portion of caustic ammonia, which is to be shook until it becomes of a milky appearance.*

* Alibert.

CHAPTER XI.

E. MEDICINES WHOSE ACTION IS PRINCIPALLY MANIFESTED IN THE CIRCULATORY SYSTEM.

Stimulants.

The term stimulus, used in its most extensive signification, is applied to whatever agent is capable of exciting the vital energies, or, as it has been expressed, of producing sensation, motion, or thought. It is not, however, in this wide and indefinite sense, that this term is employed in the classification of the materia medica. It is restricted to the designation of those remedies which, without producing any evacuations, increase the action of the heart and arteries, and of the nervous power. The articles, however, which, according to the meaning of the term, come under the general title of stimulants, differ very materially from each other in relation to the particular effects which they produce in the animal economy. Thus, a certain set of remediate substances, besides their general stimulant effects, produce, as a secondary result, insensibility, sleep, and if the dose be very large, apoplectic stupor and death. These are called narcotics, and appear to act more especially on the nervous system. Another set of stimulant remedies operate with great rapidity, producing an immediate, but transient increase of the action of the heart and arteries, and calm irregular

muscular motions, by their power of exciting and equalizing the nervous energy. These are the *antispasmodics*. A third class of stimulant substances, act more exclusively on the heart and arteries, producing a full, strong, and frequent pulse, a general warmth and fulness on the surface, and a temporary vigour of the general powers of the system, without manifesting any particular tendency to allay pain, or spasm, or to produce sleep and insensibility. These are the *incitants*, or stimulants properly so called; and constitute the class of remedies which is the object of the present chapter.

Stimulants, however, differ from each other, not only in relation to those general effects, by which they are distinguished into narcotics, antispasmodics, and incitants, but also in the more intimate or specific impressions which they produce in the animal economy. By Brown and his followers, it was imagined that the operation of all stimulating articles is essentially alike, and that they differ from each other, simply in the degree of activity which they possess. The hypothesis, however, could not stand long before the positive evidence of experience and observation; and it is now, I believe, almost universally abandoned. That stimulants, though agreeing in their general or obvious effects, are essentially diverse, as regards their specific impressions on the system, is sufficiently evident from the fact, that when the system becomes in a degree insensible to the impressions of one stimulus, from frequent repetition, it still retains nearly, if not entirely, its ordinary sensibility to the operation of another agent of the same kind. Thus, a person habituated to the use of ardent spirits, will be but triflingly affected by a dose of alcohol, which, in one of temperate habits, would produce very powerful effects, and yet both will be nearly equally affected

by the same quantity of opium. If the excitement which these agents produce were not essentially diverse, it would be impossible to conceive how this circumstance could occur. But, independent of considerations of this kind, the phenomena which result from the action of different stimulants, at once establish the fact of a radical discrepancy in the excitement which they produce upon the organization. By no management, for instance, can assafœtida, alcohol, or any other stimulus be made to produce precisely the effects which result from a proper dose of opium.

What is here said in relation to stimulants applies, with equal propriety, to every article capable of affecting the animal economy. When two phenomena succeed each other, as cause and effect, their relation towards each other is positive. The one *necessarily* follows the other, and whilst the former remains the same, the latter cannot possibly vary. It is evident, therefore, that no agents that are in the slightest degree dissimilar in character, can affect the living system in exactly the same manner, and that the nature of the excitement produced by remedies, must be as various as the remedies themselves. If these observations be correct, then the utility of a copious materia medica is at once obvious. For it cannot be doubted, that our means of controlling morbid excitement will be in proportion to the extent and variety of the impressions we are enabled to produce on the system.

As a general rule, stimulants are forbidden in all cases where bleeding is indicated. When debility is connected with much torpor and insensibility, as in the latter stage of typhus fever, it is necessary to begin with large doses. Where, however, prostration depends on direct depletion, or is connected with an excitable state of the system, it is of the utmost im-

portance to begin with small doses, and gradually to increase them, as the susceptibility to their influence is lessened by repetition.

The power of stimulants appears to be much enhanced by giving them in combination with each other. "There are, perhaps, no remedies," says Dr. Paris, "which receive greater mutual benefit by intermixture with each other, than the individuals which compose the class of stimulants; they not only thus acquire increased efficacy, but at the same time they lose much of their acrimony; if, for instance, any one spice, as the dried capsule of the capsicum, be taken into the stomach, it will excite a sense of heat and pain; in like manner will a quantity of pepper; but if an equivalent quantity of those two stimulants be given in combination, no such sense of pain is produced; but, on the contrary, a pleasant warmth is experienced, and a genial glow felt over the whole body; and if a greater number of spices be joined together, the chance of pain and inflammation being produced, is still farther diminished."

CARBONAS AMMONIÆ.—VOLATILE ALKALI.

The carbonate of ammonia is obtained in the form of white, semitransparent masses, of a fibrous texture, and efflorescing when exposed to the air. It has a pungent and peculiar odour, and an acrid taste. The degree of its solubility is not accurately ascertained. According to Mr. Phillips, it is soluble in four parts of cold water; Dr. Duncan says in two parts. It is insoluble in alcohol. When dissolved in boiling water, it undergoes a partial decomposition with effervescence.

The carbonate of ammonia is a very active stimulant, and may be employed as such in a variety of

cases, with peculiar advantage. In typhus fever it has been particularly recommended by Huxham, Pringle, and others, and some have considered it superior in this disease to any other stimulant we possess. "In the more advanced stages of the disease," says Dr. Chapman, "when the indications of increased debility come on, the volatile alkali, either alone or in combination with opium and wine, is, of all the remedies which I have ever tried, one of the most decidedly useful." In my own practice I have been much in the habit of employing this remedy, and it has appeared to me, in general, more beneficial in the advanced stages of typhus, than any of the other stimulants usually resorted to in this disease. It may be given at a much earlier stage of the disease than other remedies of this kind; for, instead of producing a hot and dry skin, like wine, camphor, &c., when given before the stage of excitement has passed by, it commonly excites a gentle diaphoresis, rendering the skin moist and comfortable, while the action of the heart and arteries is raised. "In one respect," says Dr. Chapman, "the volatile alkali differs from every article of the class to which it is attached, and, it would seem, from all other medicines. The peculiarity to which I allude is this, that the excitement it raises approaches more nearly to that of healthy action, and hence it may be recurred to earlier than stimulants generally, in the inflammatory affections."

In puerperal fever, when the inflammatory action has subsided, and the system is sinking, ammonia has been much used, and it is undoubtedly one of our most important remedies in cases of this kind.

This remedy has also been recommended in the cure of pneumonia. In the latter stage of the disease, when, after much depletion, expectoration is imperfect, the

pulse is small, and the skin dry, the volatile alkali is a remedy of unquestionable efficacy. It is obvious, however, that so long as bleeding is indicated, this, as well as all other stimulants, cannot be employed without much risk of injury. In the typhoid pneumonia which prevailed through the United States a few years ago, I often administered the ammonia in combination with a decoction of serpentaria, from the very commencement of the disease, with unequivocal advantage. In general the carbonate of ammonia may be regarded as a peculiarly useful stimulant, whenever a hot and dry state of the skin exists, with much prostration of the vital powers.

Ammonia may also be given with advantage in the latter periods of phthisis. "Where the cough is troublesome, the pulse weak, and great debility prevails, the exhibition of ammonia is attended with excellent effects. It does not flush the cheeks like most other stimulants."*

The volatile alkali has been much recommended in some affections of the alimentary canal. It is given in flatulent colic, unconnected with inflammation; and in cardialgia, depending on acidity in the primæ viæ, I have frequently known it to afford very speedy relief. Dr. Chapman states, that in the nervous or sick headache, "a dose of the volatile alkali will in some instances afford almost instantaneous relief." In the gastric affections which are common to persons of intemperate habits, this remedy is, in general, very beneficial. It is also said to produce excellent effects in diarrhœa and dysentery, depending on a debility of the intestinal canal.† In these affections it is usually given in combination with opium, and I have myself

* Barton's MS. Lectures on Mat. Med.

† Burdach's Arzneimittellehre, vol. iii. p. 417.

employed it in this way with benefit. It is only, however, in the chronic form of dysentery that we can venture on the employment of this remedy. When the discharges are not attended with much tormina, and seem to depend more on a relaxed, than on an inflammatory condition of the bowels, it will act very beneficially, not only by giving tone to the intestinal canal, but also by establishing a gentle diaphoresis, and, perhaps, by neutralizing acidity in the primæ viæ.

In chronic rheumatism, ammonia may often be used with considerable advantage. Dr. Barton employed the carbonate of ammonia with excellent effect in this disease.* It is more particularly applicable to those slight cases of wandering rheumatic pains and swelling, which remain as the sequelæ of an attack of the acute form of the disease. In several instances, after the inflammatory symptoms had been subdued by antiphlogistic measures, and pain and stiffness, with a small and irritable pulse remained, I have given the aqua ammonia in doses of twenty drops, three or four times a day, with manifest advantage. I am at present treating a case in this way, and the effects of the remedy are such as to encourage me to proceed with it. Dr. Kuhn of this city, was in the habit of employing this remedy in regular gout.† According to Brande (Mat. Med. p. 280), a plaster composed of one part of carb. ammon. and three of extr. belladonna, form a very efficacious application for allaying rheumatic or nervous pains.

In the treatment of humoral asthma, pertussis, and catarrhal affections, the volatile alkali has been a good deal recommended by some of the older writers. It does not, however, merit any particular attention in these affections.

* MS. Lectures on Mat. Med. † Ibid.

Dr. Paris states, that he has found it very useful in hoarseness depending on a relaxed state of the throat. In the hoarseness which succeeds measles it is an excellent remedy.

This salt has also been applied to the treatment of croup. Grittfeld caused his patients to respire the vapours of it, with the view of exciting cough, and thus expelling the membrane, commonly formed in the trachea. M. Rechon, a French physician, employed it both externally and internally in this disease; and, as he informs us, with much advantage.* No one at present, however, would, I hope, be willing to place any reliance on this remedy. Nothing but the most prompt employment of depletory measures, can be relied on with any degree of confidence in this formidable malady. Bleeding, emetics, calomel, and the warm bath, judiciously employed in the early stages of the disease, will in general rescue the patient from danger. After the inflammatory symptoms have been subdued, and a dry cough, with oppressed breathing and a harsh skin be present, the volatile alkali may, perhaps, be employed with some advantage. But in the first or inflammatory stages of the complaint, it would be the height of imprudence, I conceive, to use this remedy. It has also been prescribed in tetanus, epilepsy, and other convulsive diseases. In the treatment of apoplexy, especially, it was at one time a good deal recommended, but excepting in what has been called nervous apoplexy, or in that variety of the disease which is not connected with cephalic congestions, it is evidently an improper remedy. In cases attended with a pale countenance and a small and feeble pulse, the volatile alkali may be

* Observations et Reflexions sur le Croup; Recueil Periodique de la Société de Médecine, vol. xxii.—Traité de Matière Med. par J. A. Schwilque, tom. i. p. 410.

a very proper remedy; but where the vessels of the head are turgid with blood, and the face is livid and puffed up, we cannot employ stimulants without greatly endangering the patient's life.

This remedy has been highly recommended in the treatment of syphilitic affections. Peyrilhe, a French physician, speaks in extravagant terms of its efficacy in this disease;* but the experience of others has not yet confirmed the statements made by this writer. Rochefort says, that he gave the volatile alkali in venereal affections without ever deriving the least advantage from it.† This article has also been recently proposed, as a means for arresting hæmorrhages. For this purpose the volatile alkali is to be dissolved in three times its weight of water, and applied to the bleeding vessels, by means of dossils of lint. Mr. Lapira, a Sicilian chemist, who first recommended its application in this way, made many experiments with it on sheep and dogs, and found it in some instances to arrest the bleeding from the divided crural arteries of these animals with much promptness.

The volatile alkali, in conjunction with guaiacum, is an excellent remedy in certain states of dropsy and in visceral obstructions. "I have succeeded," says Dr. Barton, "with this medicine when foxglove and squills made no impression on the disease.‡

To counteract the effects of the bites of venomous reptiles and insects, the volatile alkali was formerly considered a very efficacious remedy. It was first recommended for this purpose by M. Bernard de Jussieu, who states that he employed it with complete success

* Essai sur la Vertu Anti-vénerienne des Alkalis volatiles.

† Cours Elémentaire de Matière Médicale, par Dem. Dubois de Rochefort, tom. i. p. 136.

‡ Barton's MS. Lectures.

in the case of a student who was bitten by a viper. Dr. Ramsay, of South Carolina, has also recorded several instances of its successful use in cases of this kind; but the late Dr. Barton, who paid a good deal of attention to this subject, considered it as useless in this respect. The Abbe Fontane, too, made a number of experiments in relation to the antidotal powers of this remedy, and the result of his experience is, that it is not only ineffectual, but in many cases evidently injurious. Larenti, who has also attended to this subject, found the volatile alkali entirely ineffectual in every case in which he tried it.*

The volatile alkali has moreover been applied to the treatment of cancerous affections. Martini, an Italian, and Hufeland, have published favourable accounts of its effects in this disease. Mr. Home also states, that he cured a scrofulous cancer of the lip, by administering fifteen drops of aq. ammon. three times a day, and gradually increasing it to forty drops. After using this remedy for three months, the ulcer was entirely healed. It is not, however, entitled to any particular attention in this respect. M. Patin asserts, that the acetate of ammonia is one of the most effectual remedies we possess for allaying the excruciating pains which attend carcinoma of the womb, and dysmenorrhœa. In the latter affection I have prescribed it in five or six cases, and always with signal benefit. It should be administered in full doses, and repeated every hour. (Rev. Med. November, 1828.)

Aq. ammonia is said to possess the singular property of obviating the inebriating effects of alcoholic liquors. This fact was first publicly stated by Dr. Girard of Lyons. Dr. Chantourelle, who was appointed to make a report on this subject to the

* Barton's MS. Lectures.

Medical Society of Paris, thought it might be supposed that this effect arose from the decomposition of the wine by the ammonia; chemical experiments, however, showed that such was not the case.* As an external remedy, this article will again be noticed when I come to speak of the rubefacients. It may be given either in the form of powder or julep.† The dose is from five to twenty grains. The incompatible substances are, sulphuric and nitric acids, nitrate of silver, acetate of lead, muriate of mercury, sulphate of zinc, tartarized iron, the fixed alkalies, lime, alum, magnesia, and sulphate of magnesia.

Officinal Preparations.—*Spiritus ammoniæ succinatus;* dose, from ten to thirty drops. *Spiritus ammoniæ aromaticus;* dose, from twenty to sixty drops. *Spiritus ammoniæ fœtidus.*

Formulæ.

℞.—Carbonat. ammoniæ ʒi.
Aq. fontanæ ℥vi.
Mucilag. g. arab ℥ss.
Syrup. zingiberis ℥i.—M. f. Dose, a table-spoonful.

℞.—Carb. ammoniæ ʒi.
Pulv. camph. ʒss.
Mucilag. g. arab ℥i.
Sacch. albi ℥iss.
Aq. cinnamon ℥vi.—M. f. Dose, a table-spoonful.

℞.—Liq. ammon. succinat. ʒii.
Tinct. castor ʒiii.
Æther. sulph. ʒi.—M. Dose, from twenty to forty drops.

OLEUM TEREBINTHINÆ.

This is a limpid essential oil, possessing a strong penetrating odour, and a hot, bitter, and pungent taste. In *hot* alcohol it dissolves without difficulty; but on suffering it to cool, it again separates. It is com-

* Lond. Med. and Phys. Journ. No. 270.

† ℞.—Ammon. carbonat. ʒss.
Aq. menth. pep. ʒvii.
Syrupi aurantii ℥ss.—M. Sumatur octava pars.

pletely soluble in six parts of sulphuric æther. It unites with sulphur, wax, resins, and balsams, when exposed to a gentle heat. The alkalies have no action on it.

The oil of turpentine is an active and penetrating stimulus; and admits of a great variety of important remediate applications. It possesses diuretic and anthelmintic properties, and in large doses produces active purging. When taken in moderate doses, it increases the fulness and frequency of the pulse, and the heat of the skin, without materially affecting the functions of the brain. In large doses, however, it produces a sense of fulness in the head, attended with vertigo, or a feeling of intoxication, and slight nausea. It appears to be speedily absorbed into the circulation, for whether injected into the rectum or received into the stomach, its peculiar odour is soon very perceptible in the breath, and to the urine it imparts the odour of violets. Employed in moderate and frequently repeated doses, it is apt to give rise to irritation of the urinary passages, amounting, sometimes, to violent strangury.

As a general stimulus in the low states of fever the turpentine is but seldom prescribed. It has, however, been recommended in the treatment of yellow fever, by some practitioners both of the West Indies and of the United States. Dr. Physick was, I believe, the first who employed it in this disease. He prescribed it, with much benefit, for allaying the irritability of the stomach, and consequent violent vomitings, which occur in this fever. It does not appear, however, from the experience of other practitioners, that it deserves any particular notice in this respect.

Lately the oil of turpentine has been much recommended as a remedy in puerperal fever. Dr. Brennan,

of Dublin, was the first who administered it in this disease, and his report of his experience with it is very favourable.* Other English practitioners have since employed it with benefit in this dangerous malady: but I am not aware of its having, as yet, been employed with any particular advantage by the physicians of this country. Since the last edition of this work was published, I have prescribed the turpentine in nine or ten cases of this disease, and in most instances with decided benefit. I have generally administered it in conjunction with castor oil, in the proportion of three drachms of the turpentine to an ounce of the oil at a dose. I am entirely convinced, that after prompt and efficient blood-letting, very great advantage may often be obtained from the use of the turpentine and castor oil in this formidable malady. This remedy is particularly beneficial in that variety of puerperal fever which depends on intestinal irritation; and which, though not often attended with inflammation, strongly resembles genuine puerperal peritonitis.

In the treatment of epilepsy the spirits of turpentine is a valuable medicine. Dr. Latham speaks in high terms of its effects in this disease; and Dr. William Money, surgeon to the Royal Metropolitan Infirmary for sick children, employed it with much advantage in cases of this kind.† Dr. Paris also thinks it may prove beneficial in cases of this kind by unloading the bowels, and by the peculiar cerebral excitement which it produces, when given in large doses, and which is evinced by a species of intoxication, "unaccompanied by that hilarity and elevation of thought that so usually follow the potation of spirituous liquors. I am inclined

* Transactions of the Fellows and Licentiates of the King and Queen's College of Physicians of Dublin.

† Medico-Chirurgical Review and Journal, Sept. 1822, p. 451.

to believe, however, that it often acts beneficially in cases of this kind by destroying worms in the alimentary canal, a very frequent cause of epilepsy."

In uterine epilepsy—that is, in cases depending on catamenial disorders, this remedy is said to be particularly efficacious. Dr. Prichard declares, that according to his experience, the oil of turpentine is decidedly the best emmenagogue we possess in uterine epilepsy. He asserts, that he has employed the turpentine with entire success in cases of this kind, after various other remedies had been ineffectually used. In a case of epilepsy in a young lady, about twenty years old, who had never menstruated, I succeeded in establishing the catamenial function and arresting the disease, by the employment of the remedy, in conjunction with bloodletting, and the daily use of the hip-bath. In this case, one drachm of the turpentine was administered twice daily, until it produced severe strangury; after the strangury had subsided, the turpentine was again administered, until the same effect was produced, &c. In about two weeks after the commencement of this treatment the menses began to flow, and the epileptic attacks ceased to return.

Turpentine is a medicine of very considerable utility in chronic rheumatism. In sciatica, especially, it was employed with much success by Dr. Cheyne, and Dr. Francis Home.* Of its efficacy in this form of rheumatism I have, in several instances, had unequivocal evidence. Cheyne gave it with honey, in doses of from one to four drachms, three times a day. Home, however, used it in much smaller doses, and his success was not less than that of Dr. Cheyne. I have commonly given from twenty to thirty drops, three times a day, on sugar, and at the same time directed

* Clinical Experiments.

frictions with the camphor liniment, recommended by Home and Ferriar, for lumbago.*

This remedy has lately been much extolled for its efficacy in removing obstinate obstructions of the bowels. Dr. Kinglake gives an account of two cases in which the turpentine manifested decidedly beneficial powers. The first case was one of extreme obstinacy; "bleeding, the warm bath, blistering, lenient and brisk cathartics, with repeated clysters, were assiduously but unavailingly used. The case appeared almost hopeless, when the spirit of turpentine was administered in doses of two drachms, conjoined with half an ounce of castor oil, every two hours. The first and subsequent doses, to the number of four, remained on the stomach, when full and complete catharsis was produced."† Dr. Paris also adds his testimony in favour of the utility of turpentine in cases of this kind. "In obstinate constipation, depending on affections of the brain, I have lately had several opportunities of witnessing its beneficial effects. In an unfortunate instance of hydrocephalus acutus, in a boy of thirteen years of age, it brought away an accumulation of feculent matter, almost incredible as to quantity, after the total failure of the strongest doses of ordinary purgatives."‡

In chronic cases, attended with flatulence, acid eructations, a sallow countenance, a foul tongue, with griping and acrid stools, the oil of turpentine will frequently produce highly beneficial effects. Dr. Prichard declares, that he never employed any remedy with so much benefit as oil of turpentine, in cases attended with such a state of the bowels. "It occasions mode-

* Pulv. camph. ℈ii. ungt. basilic. ℥i. sapon. commun. ℥iss. pulv. sem. sinap. ℈i. Fiat. unguent.

† Lond. Med. and Phys. Jour. No. 271.

‡ Pharmacologia, p. 540.

rate and regular evacuations, corrects the tendency to a frequent repetition of griping and irritating stools, and relieves, or completely removes, flatulence. At the same time the oil of turpentine exerts a peculiar sedative or tranquilizing power on the nervous system; it lessens irritability, the disposition of starting and convulsive twitching of the muscular fibres, and promotes sleep."*

The oil of turpentine, has also been successfully employed in tetanus. Dr. Hutchinson cured a case of idiopathic tetanus by administering half an ounce of the turpentine every two hours. Dr. Mott, of New York, also employed it with signal benefit in a traumatic case. He gave a tea-spoonful of the turpentine every fifteen minutes, for two hours, when the spasms intermitted. It was then repeated at much longer intervals until one hundred and twenty tea-spoonfuls were taken.

In certain diseases of the eye, the ol. turpentine appears to be a remedy of very excellent powers. In *iritis*, it has been frequently employed with the happiest effects. Drs. Carmichael and Guthrie administered it with decided benefit in cases of this disease; and Mr. Middlemore has more recently employed it "in ordinary iritis with results fully confirmatory of the observations of the two former physicians." Mr. Middlemore strongly advises the use of a drachm of turpentine, two or three times daily, in cases where, after the acute symptoms have been relieved by mercury, there remains a slow disorganizing inflammation in the iris. The turpentine has been found equally beneficial in *choroidal* and *retinal* inflammation.

Formerly, the spirit of turpentine was frequently employed in hepatic obstructions, and especially in jaundice from the obstruction of the bile-ducts by biliary

* Prichard on Diseases of the Nervous System, p. 263.

concretions. Its use in these affections is now, however, entirely neglected.

In the treatment of obstinate gleets, turpentine, administered internally, will often produce very good effects. I have also known it to be employed with success in gonorrhœa; but in recent cases it is too irritating to be early given in this affection.

As an external remedy turpentine admits of a great variety of useful applications. In the treatment of burns and scalds it is undoubtedly a remedy of great utility. Kentish, who first employed the turpentine in cases of this kind, directs that it be mixed with a portion of basilicon ointment, with which pieces of linen are to be spread, and laid on the injured part, being careful not to let the ointment extend over the sound skin. When this is done very soon after the burn has been received, it hardly ever fails, in a short time, to remove the burning pain and violent inflammation of the part, and to establish a regular suppuration. According to the experience of Dr. Geddings, the oil of turpentine is a valuable remedy for excessive salivation. He states that he has used it extensively for this purpose, both in hospital and private practice, "with the most satisfactory results." "It has also been much employed" he observes, "by several of our medical friends, whose testimony fully substantiates our good opinion." Two drachms of the turpentine should be diluted with eight ounces of thin gum arabic mucilage, and used frequently during the day as a gargle. In some instances Dr. Geddings used the undiluted turpentine "with the same happy effects." It at first generally causes severe smarting, which, however, soon subsides, and becomes less and less at each successive application. (Am. Jour. of Med. Sciences, vol. vii. p. 266.)

Mixed with oil, and introduced on cotton into the ears, turpentine has been found serviceable in deafness arising from a diseased action of the ceruminiferous glands.*

I have already spoken of the vermifuge powers of this article, under the head of Anthelmintics; and I shall hereafter again have to notice it when I come to speak of rubefacients.

As an anthelmintic, turpentine is given in doses of from one to three ounces. When used as a stimulant or diuretic, it is given in doses of from ten to forty drops. Two ounces of the oil, incorporated with a pint of mucilage, forms a very valuable clyster, in obstructions of the bowels and flatulent colic.

Dr. Nimmo recommends the following method for purifying the oil of turpentine for medicinal use, "without diminishing its efficacy, but greatly lessening its disagreeable taste and its injurious effects upon the kidneys:—To eight parts of the oil add one part of the strongest alcohol, and let them be well agitated; in a few minutes a separation takes place; the oil, unless very impure, falls to the bottom, and the alcohol, having dissolved the impurities, floats at the top. Pour off the alcoholic portion, add an equal quantity of alcohol as before, agitate, and separate the liquids. If this be repeated three or four times, the oil becomes nearly tasteless, almost without smell, and when a portion of it is evaporated, it leaves no residue. The oil, however, speedily undergoes alteration, and returns to its original state of greater or less impurity.

M. Vangelin has ascertained that if 100 parts of pure oil of turpentine in volume, and 20 parts of alcohol be mixed together, they do not separate again by rest, but form a homogeneous fluid.

* Paris's Pharmacologia.

PHOSPHORUS.

Phosphorus is a compact substance, of a pale yellow colour, readily cut with a knife, and exhibiting when broke a vitreous fracture. It is exceedingly combustible, inflaming at the medium temperature of the atmosphere. It has an acrid taste and a strong alliaceous odour. It becomes fluid when put in hot water, and assumes the appearance of an oil. Alcohol and water do not dissolve it; but in the essential and fat oils, and in sulpuric æther, it is quite soluble.

Phosphorus is one of the most active and penetrating excitants with which we are acquainted; producing, when incautiously taken, exceedingly violent and dangerous effects. When rubbed upon the skin it immediately creates a burning pain and inflammation of the part to which it is applied. Taken inwardly, in the dose of from one-eighth to one-fifth of a grain, it produces an agreeable warmth, and temporary vigour of the powers of the system, and increases very considerably the secretion of urine. In somewhat larger doses it produces restlessness, heat, an irritated and feverish pulse, furred tongue, engorgement of the vessels of the head, stricture and dryness in the breast, violent burning and pain in the stomach, nausea, and bilious vomiting. Two or three grains produce excrutiating burning pains in the stomach and bowels, attended commonly with distressing vomiting and hiccup; a sinking of the powers, the pulse becoming gradually imperceptible, and the whole surface of the body cold, and death. The inflammation in the stomach and bowels is generally of small extent. The stomach is commonly found much distended, and the intestinal canal closely contracted in different places. It is said, that when given

even in moderate doses, it is apt, on being long continued, to produce indurations in the stomach, chronic vomiting, constipation, atrophy, and death. Weikard states, that he once gave to a paralytic patient two grains of phosphorus incorporated with some conserves. On the following day the dose was increased to three grains, and he proposed augmenting the dose progressively, when all at once, on the third night, the patient was seized with violent contractions. Blisters were applied, and copious draughts of mucilaginous drinks given. Nevertheless, the patient sunk and died on the fourth day.* Brera relates a similar occurrence in his practice. He administered two grains to a paralytic woman. After the first dose she appeared to be better; on taking the fourth dose, however, she began to complain of violent burning pain in the stomach and bowels, and in forty-eight hours after she died.†

Mentz, a German physician, is said to have been the first who published any thing relative to the remediate employment of this article.‡ It is highly recommended by some authors in the treatment of typhus fever. Lobstein says, that when given in this disease, the effects frequently appear after four hours, but sometimes not till twenty-four. "The vital warmth returns, transpiration is restored, the pulse improves, the urine is voided freely, and commonly turbid, with a sediment; the abdomen loses its tension; the excrements have a sulphurous smell, and shine in the dark; the delirium ceases, and the patient recovers his recollection, the mental faculties return, and a beneficial sleep restores

* Alibert, Matiere Medicales, &c. vol. i. p. 192.

† Brera Rifflessione Medico-prattishe sull' uso interno de Fosforo. Pavia, 1798.

‡ Menzius, Dissertatio de Phosphori loco Medicinæ Assumti Virtute Medica. Wittemb. 1761,—in Haller's Disp. Pathol. tom. vii. p. 288.

the strength in a few days."* I do not doubt that its cautious use in the latter stages of this disease may often be followed by salutary consequences. Still, however, as it is an exceedingly active substance, and apt to produce dangerous effects when improperly taken, its use should not be ventured on without the utmost caution. Burdach states that it is especially efficacious in the typhus of the exanthemata, where the eruption has receded or does not come out sufficiently, from deficiency of action in the system.

Phosphorus has also been given with success in spasmodic and convulsive diseases. Handel mentions several cases of epilepsy which were cured by this remedy. He relates the case of a girl who had frequent attacks of epileptic convulsions, and who was entirely freed from the disease by taking, in a mistake, some water out of a vial containing phosphorus. Instructed by this case, he says that he afterwards gave it to other epileptic patients, and with much success.† Alibert, on the contrary, states that he gave this substance in one-grain doses, every twenty-four hours, to six epileptic patients, and continued its use for nearly two months, not only without deriving any advantage, but, in the majority of cases, with evident injury. Lobstein, who appears to have paid great attention to the remediate employment of phosphorus, attributes the dangerous effects which have been observed to arise from its use to the improper mode in which it has been usually administered; namely, in pills, electuaries, or emulsions. Its beneficial effects, he observes, are only produced when the remedy is completely dissolved in its vehicle. He found, from much experience, he says, that its solu-

* J. F. D. Lobstein, Recherches et Observations sur le Phosphore à Strasburg, 1815. Vid. Lond. Med. and Phys. Journal, for October, 1816.

† Alibert, Mac. Med. vol. i. p. 192.

tion in vitriolic æther, with the addition of some aromatic essential oil, is a safe and convenient mode of exhibiting this medicine. From one-eighth to one-fourth of a grain of the phosphorus may be thus given at a dose; and experience has shown, that one grain in twenty-four hours is, for the most part, quite sufficient. It is said that phosphorus agrees much better, and can be borne in larger doses, when the atmosphere is dry and clear, than in cold and damp weather. "It ought never to be taken on an empty stomach, but always an hour after the patient has taken nourishment; salad and acid food, and drink in general, even beer, is improper. To quench the thirst, a mucous solution of salep, with sweet and generous wine, is the best beverage; the patient must also refrain from drinking immediately after having taken phosphorus. In acute diseases, where there is commonly but little appetite, broth, with a little nutmeg, or vermicelli, sago, &c. may be taken; but in chronic disorders, where digestion is not impaired, veal, beef, and mutton, either boiled or roasted; also light vegetables, such as carrots, French beans, &c. are a fit diet. Cabbage, turnips, onions, radishes, rape, cole, peas, &c. must be avoided, causing a sensasation of fulness in the region of the stomach, together with anxiety, insupportable heat, and often vomiting and diarrhœa. The food must neither be too hot nor too cold. In case the patient go out, it is of the greatest importance to be on his guard against catching cold, which is apt to occasion vertigo and diarrhœa, or a relapse."*

From what we know of this substance, therefore, there is much reason to believe that, in the hands of

* Lond. Med. and Phys. Jour. for Oct. 1816. See also Lobstein's Monograph, already referred to, and Lobstein Löebel's Observations in Horn's Archiv. 1810, B. ii. No. 2.

a prudent physician, and employed with the precautions mentioned above, it will be found a safe and valuable remedy.

ALCOHOL.

This is a colourless and transparent fluid, obtained from vinous liquors by distillation. Its specific gravity is .815. It boils at the temperature of 176°, and does not congeal at any known degree of cold. It burns with a pale blue flame, and leaves no residue. In a state of perfect purity, alcohol consists of a combination of carbon, hydrogen, and oxygen. "It dissolves soap, vegetable extract, sugar, oxalic acid, camphoric, tartaric, gallic, and benzoic acid; volatile oils, resins, and balsams; it combines also with sulphur and the pure fixed alkalies, but not with their carbonates."

Alcohol is an exceedingly active and diffusible stimulus. The effects which arise from its action on the living system, are so well known, that it would be superfluous to give a description of them. Brodie, who made experiments with alcohol on living animals, concludes that it is not absorbed, and that its general effects depend on a sympathetic impression on the brain by means of the nerves of the stomach. This he infers from the following facts: 1. Animals that die from the action of alcohol exhibit a decided inflammation of the stomach, but the brain is never found inflamed. 2. The effects produced by this fluid follow its application so rapidly, that it would seem impossible that there could be time for its absorption. 3. Persons labouring under the influence of spirituous liquors are frequently restored by vomiting. 4. When alcohol is introduced into the stomach, combined with rhubarb, this latter substance can never be detected in

the urine when examined after death.* According to the experiments of Orfila, however, it appears that alcohol is sometimes absorbed into the circulation; and this opinion is corroborated by other authenticated facts.† Be this as it may, it is evident the phenomena which result from an over-dose of alcohol depend directly on the action which it exerts upon the sensorium commune. The effects which alcohol produces are, indeed, very analogous to those which arise from concussion or compression of the brain; and it is not improbable that the symptoms which arise from large draughts of alcoholic liquors, depend mainly on the inordinate flow of blood which they determine to the vessels of the brain, and the consequent compression of the organ.

Alcohol, in its pure state, is seldom employed as an internal remedy. In the various forms of ardent and vinous liquors, however, it is an exceedingly common remedy in all cases of general debility unaccompanied by local inflammations. In the treatment of typhus fever, brandy and wine have long been considered as a principal remedy. When the stage of excitement is over, and stimulants are indicated, there is, indeed, no remedy more grateful and beneficial than the prudent use of generous wine. Where there is great pros-

* Philosoph. Trans. for the year 1811, p. 178, first part.

† A singular fact of this kind is related by Dr. Cook, in his Treatise on Nervous Diseases,(*a*) on the authority of Mr. Carlisle: "A few years ago," says Dr. Cook, "a man was brought dead into the Westminster Hospital, who had just drunk a quart of gin for a wager. The evidence of death being quite conclusive, he was immediately examined, and within the lateral ventricles of the brain was found a considerable quantity of a limpid fluid, distinctly impregnated with gin, both to the sense of smell and taste, and even to the test of inflammability. The liquid appeared to the senses of the examining students as strong as one-third of gin to two-thirds of water.

(*a*) Vol. i. p. 221.

tration, it may be given in very large and repeated doses without inducing the slightest intoxicating effects. Whenever this is the case, and it produces a fuller, stronger, and slower pulse, and renders the skin moist and of a natural warmth, we may be assured that its influence is beneficial. If, however, it render the pulse more frequent and corded, flush the countenance, and induce restlessness, delirium, thirst, and a dry and burning skin, then its effects will be injurious, and we are admonished of the necessity of at once laying aside its use.

Wine has been employed with much advantage in tetanus. Rush says, "it should be given in quarts, and even in gallons, daily." Currie saw a patient cured of this disease, in the Liverpool Infirmary, "by drinking nearly a quarter cask of Madeira wine." Dr. Hosack also speaks highly of wine in this disease, and advises its being given without any other stimulant.*

In the chronic form of bowel complaints, the use of the red wines, particularly of port, is almost invariably attended with salutary effects. The slight astringency which these wines possess, renders them peculiarly serviceable in such cases; and wherever a stimulus is indicated and a looseness of the bowels exists, they ought never to be neglected. During the state of convalescence from acute diseases, when the vital powers return slowly to their wonted vigour, wine may be employed with very great benefit. In the debility of old people, wine is especially useful; Pliny, speaking of its salutary effects, says—

> ——— vino alunter vires, sanguis
> Calorque hominum.

And it has, indeed, been emphatically called, "the milk of old age."

* Rush's Medical Inquiries, vol. i. p. 186.

In relaxed and cachectic subjects, the moderate enjoyment of wine is commonly attended with very agreeable and salutary effects. It imparts vigour to mind and body, and infuses a genial glow throughout the whole system. Ovid well understood its benign influence—

> Vina parant animos, faciuntque caloribus aptos,
> Cura fugit multo, diluiturque mero.
> Tunc veniunt risus, tunc pauper cornua sumit,
> Tunc dolor et curæ, rugaque frontis abit,
> Tunc aperit mentes aevo rarissima nostro
> Simplicitas, artes excutiente Deo.

Alcohol is also used as an external application to sprains and rheumatic swellings; diluted with water, it has been much recommended as an application to burns.

CAPSICUM ANNUUM.—RED PEPPER.

This is a native of South America; cultivated in large quantities in the West India islands, and frequently also in our gardens, for the beauty of its red pods. The taste of the pods, which are the only parts of the plant employed either for medicinal or economical purposes, is exceedingly pungent and acrimonious. They contain an oily matter, extractive and fecula. Oersted has obtained the acrid principle of pepper separately, which appears to possess some of the characteristic properties of an alkali. The virtues of the capsicum are entirely extracted by alcohol and æther.

This substance is an active and agreeable stimulus, and admits of very useful remediate applications. Bergius recommends it as an effectual remedy in obstinate intermittent fevers, connected with much debility and torpor of the digestive organs and intestinal canal.

Capsicum has also been prescribed in the latter stage

of typhus; and in certain circumstances of this disease, it undoubtedly is a very useful remedy, as I have in several instances experienced in my practice. When the alimentary canal becomes torpid, and ceases to expel the flatus, giving rise to symptoms of tympanitis, the capsicum, with spirits of turpentine, has afforded me very great advantages. I do not think, however, that this article is well calculated to answer our purposes, where we wish merely to excite the general powers of the system. It is, as Dr. Chapman correctly observes, more a *local* than a general and diffusive stimulant, and answers, therefore, exceedingly well, where general debility is accompanied by much torpor or relaxation of the alimentary canal.

In the treatment of cynanche maligna, capsicum has been much recommended, both as a gargle and an internal remedy. Mr. Stuart,* in particular, speaks very highly of its powers in this disease. He directs "two table-spoonfuls of the small red pepper, or three of the common Cayenne pepper, and two tea-spoonfuls of fine salt to be beat into a paste, on which half a pint of boiling water is to be poured, and strained off when cold; an equal quantity of very sharp vinegar being added to this infusion, a table-spoonful every half hour is a proper dose for an adult." Mr. Stephens gave it to four hundred patients labouring under this disease, and "it seemed to save some whose state had been thought desperate." It was also employed with great benefit in this disease by Mr. Collins. He observed, that swallowing the infusion produced slight convulsive motions, and a sensation of heat in the œsophagus and stomach, and in a short time after a general glow over the body was felt, without materially

* Medical Commentaries, vol. xii.

changing the state of the pulse. Mr. Collins also used this remedy successfully in intermittent fevers.*

Dr. Makitrick states, that he has found this medicine very serviceable "in that morbid disposition which he calls the cachexia africana, and which he considers as a most frequent and fatal predisposition to disease among the slaves."

Capsicum has also been used in partial paralysis; and Dr. Wright says, that it is an excellent remedy in lethargic affections.

Lately this medicine has been recommended as highly useful in the advanced stages of acute rheumatism. About five years ago I employed it in a case of this kind, in large and frequent doses, with evident advantage; and I have heard of other practitioners who have given it in this disease with favourable results.

Capsicum may be given in the form of pills or tincture. The dose of the powder is from ten to thirty grains.

CARYOPHILLI AROMATICA.—CLOVES.

These are the unexpanded flower-buds of a beautiful tree of the family of myrtles, indigenous to the Molucca islands, and now carefully cultivated by the Dutch at Amboyna. The whole tree is strongly aromatic; but the flower-buds, which are collected in October and November, when they are still green, and dried in the sun, after having been exposed to smoke for a few days, are the only parts met with in commerce, or employed for domestic or medicinal purposes.

The taste of cloves is highly aromatic, pungent, and permanent. Their odour is strong, fragrant, and aromatic. By distillation, they yield about one-eighth

* Wilson on Febrile Diseases, vol. ii. p. 141.

their weight of an essential oil. Water extracts from them a nauseous and slightly astringent extract, containing very little of their peculiar aromatic taste. All its virtues are completely extracted by alcohol and æther.

Cloves are the most stimulating of all the aromatic remedies, and may be used with advantage in all cases where we wish to produce a strong local impression on the stomach. They have accordingly been frequently prescribed with very good effect in flatulent colic, and in cholera morbus. In the latter affection I have known the tincture of them administered with prompt relief to the patient. The cloves are, however, much more commonly employed as adjuncts to other remedies than in an uncombined state. The essential oil is used as a local application in toothache. They may be taken in doses of from five to fifteen grains.

ZINGIBER.—GINGER.

This is the root of a plant* growing spontaneously in the East Indies, and now abundantly cultivated in some parts of the West. The root is tuberous, a little compressed, and marked with irregular prolongations, which often give it a palmated appearance; the surface is of a pale or ash colour, and sometimes purple. Its taste is exceedingly acrid, producing a glowing heat throughout the whole cavity of the mouth. Its odour is highly aromatic, frequently producing sneezing when held to the nose. It contains, according to Vauquelin, a peculiar acid, a resino-extractive matter, fecula, and an essential oil. The watery and alcoholic extracts are extremely acrid.

* Amomum zingiber. *Linn.*

Ginger is a powerful, but not very diffusible stimulant, and appears to possess very useful remediate powers. In an atonic and torpid state of the alimentary canal, attended with colic pains and other dyspeptic symptoms, ginger often affords very great relief. The dyspeptic symptoms and pains in the stomach which are common in gouty persons are frequently much relieved by taking the infusion of this root. It has also been employed with success in the cure of intermittent fevers, accompanied with torpor of the abdominal viscera;* and in hooping-cough, where the lungs are much oppressed with slime, it is said to be a remedy of very considerable utility.

It is usually given in the form of an infusion. By decoction its aroma is dissipated. The dose of the powder is from ten to twenty grains.†

PIPER NIGRUM.—BLACK PEPPER.

Pepper contains, according to the analysis of Pfaff, a mild essential oil, having the peculiar odour of the pepper; a dark brown extractive, possessing no acrimony; and a green, acrid, inflammable resin. Alcohol and æther extract all its virtues, but water does so only partially.

Pepper is a very permanent and general stimulant, and may be employed in a variety of cases with considerable advantage. Lately it has been recommended as an efficacious remedy in intermittent fever. Dr. Louis Frank, privy counsellor and principal physician to her majesty Maria, duchess of Parma, has published

* Burdach.

† *Ginger Beer.*—"The following is the receipt by which this popular beverage is prepared: Take of lump-sugar half a pound, cream of tartar half an ounce, bruised ginger an ounce, boiling water one gallon. Ferment for twenty-four hours with yest."

a summary of his experience of the utility of black pepper in this disease, from which it appears that its powers in this respect are not inconsiderable. Dr. Frank states, that by the use of this remedy fifty-four out of seventy patients were completely cured in a short time, without relapse. The mode in which he gave the pepper was, to dip the seeds into mucilage of gum arabic, and afterwards into some powdered colomba to disguise it, and then to administer them as pills. The dose is from five to eight pills twice a day.* None of his patients required more than from seventy to eighty pills for perfect recovery.

In an atonic and torpid state of the intestinal canal, a few grains of pepper swallowed two or three times a day, are often very beneficial. Pepper has also been employed in chronic rheumatism with good effects. It is, however, more frequently given in combination with other substances, particularly with tonic bitters; and it may be thus employed with much advantage in weakness of the digestive organs, paralysis, and intermittent fever.†

* Journal Complementaire du Dictionnaire des Sciences Medicales, No. 22.

† Ward's celebrated paste for fistula and piles, contains a large proportion of pepper. It is thus prepared: Take black pepper and elecampane, powdered, of each ℥viii., powdered fennel seeds ℥xxii., honey and sugar, of each, ℔i.; beat, and mix them well together in a mortar. Dose, the size of a nutmeg, three times a day.

CHAPTER XII.

F. MEDICINES ACTING SPECIFICALLY UPON THE ORGANS OF SECRETION.

I. *Medicines that Act on the Cutaneous Exhalents.*

DIAPHORETICS.

These are medicines that increase the natural transpiration by the cuticular exhalents. When they augment this discharge to such a degree as to produce sweat, they are called sodorifics; the term diaphoretic being usually applied to such articles as increase the insensible perspiration. But as these two terms express simply a stronger or weaker operation of the same kind, it is customary, in classifications of the materia medica, to employ only the latter, as a general appellative for the remedies of this class.

Obstructed perspiration may depend on very opposite states of the general system. We find it connected with high febrile action, and also with a slow and languid circulation. It is evident, therefore, that the remedies which are calculated to restore this function when its defect or loss is associated with high vascular action, must be very different from those which are calculated to excite it in an opposite state of the system. In the former case, our diaphoretics must be

such as have a direct tendency to lessen the action of the heart and arteries, and at the same time to relax the mouths of the transpiratory vessels. Hence cold ablutions, refrigerants, antimonials, and bleeding are very often directly and decidedly diaphoretic. When the arterial reaction is strong, and the skin very dry and hot, a draught of very cold water often causes free diaphoresis. Where, on the contrary, torpor of this function is accompanied with a languid circulation, and with a pale, shrivelled, and cold skin, recourse must be had to diaphoretics of a stimulant character. Although, perhaps, every stimulant may, under certain circumstances, produce sweating, simply by increasing the action of the heart and arteries, yet it must not be supposed that the stimulant diaphoretics act solely by giving a general increase of momentum to the blood, since many of these remedies undoubtedly possess a peculiar tendency, not only to determine the circulation to the capillaries of the cuticular surface, without materially augmenting the action of the heart and arteries, but also specifically to excite the activity of the perspiratory vessels. Diaphoretics act either by relaxing the mouths of the transpiratory vessels, or by increasing their activity, or by establishing an increased flow of blood to them, or, finally, by at once producing both the former and the latter of these effects.

Although many of our diuretics are manifestly stimulant in their primary operation, yet by the increased evacuation which they produce, they are ultimately antiphlogistic in their effects. Those of the refrigerent class are eminently so, and they therefore constitute very important remediate means, in all acute febrile disorders. It is not, however, simply by depleting, that they act beneficially in acute affections. Much advantage, it may be presumed, is derived from the evapora-

tion and consequent abstraction of morbid heat which constantly takes place during diaphoresis. In this way a very considerable source of irritation is obviated. There is another effect by which these remedies do good, especially in the inflammatory affections of internal organs. They increase the flow of blood to the skin, and thereby relieve, in some degree, the internal inflamed vessels, by a kind of local abstraction from the affected organs.

Health is very intimately connected with the regular performance of the respiratory function. Whenever the transpiration by the skin is suddenly checked, more or less derangement of the system is invariably the consequence. That portion of the circulating fluid which nature designs to be cast off by the cutaneous emunctories, as no longer fit for the purposes of the animal economy, is retained, and becomes a source of morbific irritation to the heart and other organs. That obstructed perspiration may prove detrimental to health in this way, can, I think, hardly be doubted; for it is obvious, that the accidental obstruction of any important emunctory must give rise to an accumulation of recrementitious elements of the blood, and impart to it morbific qualities. Frequently the injurious consequences that might result from the retention of the perspirable matter is in part, if not wholly, obviated by the vicarious action of the internal emunctories, and particularly of the kidneys. There is, however, another mode in which the sudden suppression of the perspiratory discharge, may excite morbid phenomena in the animal economy. It disturbs the regular current of the circulation; the blood retreats to the vessels of the internal organs, giving rise to congestions, inflammation, and fever. One of the most frequent external causes of obstructed perspiration is

exposure to a cold and humid atmosphere. When the body is exposed to the influence of this cause, the circulation in the sub-cutaneous vessels is immediately diminished, both in velocity and in volume, and the skin becomes pale, shrunk, and cold. As a natural and necessary result of this condition of the circulation on the surface, the blood is repelled to the internal vessels, and much of that recrementitious fluid which nature intends, and the welfare of the economy requires, to be cast off by the skin, is retained in the system. There is, therefore, under these circumstances, a superabundant portion of deteriorated blood forced upon the heart, which acting upon it as a preternatural stimulus, brings on sooner or later re-action, or the stage of febrile excitement.

From the manifest influence, therefore, of the perspiratory function over the health of the body, it is obvious that those remedies which are calculated to restore the regular action of the cutaneous exhalents, must be of much importance in the cure of diseases. Sudorifics have, indeed, been among the earliest and most common remedies in every nation. Valuable, however, as their judicious employment undoubtedly is, there is perhaps no other class of medicines which has been so frequently and perniciously abused in the treatment of diseases. Van Helmont and his followers, believing that acute diseases were to be cured by expelling some morbific matter after its proper concoction, employed the most stimulating sudorifics together with high temperature, in every grade of febrile exacerbation. This practice appears to have been exceedingly common during the seventeenth and early part of the eighteenth centuries. It is easy to perceive that its effects must have been highly pernicious. It is not, however, to be concluded from this that dia-

phoretic remedies are injurious, even in the most vehement febrile excitement. Quite the contrary, indeed, is the fact; for diaphoresis is, perhaps, always salutary in fevers of high excitement, and the more so in proportion as the arterial action is vehement. The utility or perniciousness of this discharge, in acute disorders, depends on the means that are used to excite it. It is the employment of heating or stimulating remedies for this purpose that renders the practice so injurious. If we elicit perspiration by cool applications, or by the use of diaphoretics of the refrigerent kind, we in general derive unequivocal advantage from it.

Having premised these general observations concerning the nature and employment of diaphoretics, I come in the next place to say something relative to their particular application in certain diseases. Diaphoretics are, in general, strongly indicated in all those febrile affections which arise from the influence of atmospheric vicissitudes. As the first link in the chain of morbid actions in diseases from this cause, is torpor of the perspiratory vessels, it is always of great consequence to attend to the full re-establishment of this important function in their treatment. In the phlegmasiæ, diaphoretics are indeed among our most common, and certainly also among our most useful remediate means, when judiciously employed. But it must not be forgotten, that where the febrile excitement runs very high, the *stimulating* diaphoretics will often do injury, unless the inordinate action of the heart and arteries be previously moderated by bleeding, and evacuations from the intestinal canal. It is not so, however, with the refrigerent or relaxing diaphoretics; these may be resorted to with advantage, in fevers of the most violent inflammatory excitement.

In the treatment of remittent and continued fevers,

diaphoretics are among our most common and useful remedies. A hot and dry skin is invariably attended with augmented distress, in whatever disease it may occur. When this is the case, nothing affords so much relief to the patient as a free flow of the perspiration. In general, however, it is not necessary to excite copious sweating, as every advantage derivable from this source, may be obtained by a degree of diaphoresis just sufficient to keep the skin moist. Before resorting to remedies of this class, the contents of the alimentary canal should be well evacuated. An attention to this is especially necessary in cases where there is reason to suspect the existence of vitiated secretions in the bowels. When the action of the heart and arteries is of a high grade, recourse must be had to cooling applications, and to the refrigerent or relaxing diaphoretics, such as nitre, antimony, acids, &c. But in fevers of low vascular excitement, attended with a dry and burning skin, the stimulating diaphoretics must be used, in conjunction with relaxing applications to the external surface, such as cool or tepid affusions, &c. In the congestive forms of typhus, nothing is of greater importance than the application of such external means as are calculated to excite the action of the skin and sub-cutaneous vessels. The application of heat, by means of bladders or bottles filled with hot water, and the use of rubefacient frictions of the most active kind, tend in a powerful manner to draw from the congested vessels of the oppressed internal organs, and to re-establish the equilibrium of the circulation. Although we should endeavour to keep the skin soft and gently moist in every stage of typhus, copious sweating is not to be encouraged, except in the early stages of the complaint, before the system has become greatly debilitated.

The very intimate sympathetic connexion which sub-

sists between the cutaneous surface and the lungs, renders the employment of diaphoretics particularly proper in the treatment of the inflammatory affections of these organs. When the skin is moist with perspiration, the breathing is generally more free, the pain and distressful feeling in the throat less severe, and expectoration easier.

In incipient phthisis pulmonalis, the most important remedial means are such as tend to keep up a regular action of the cutaneous emunctories. It is for this purpose that flannel is worn next the skin, and that patients are directed to visit mild and equable climates.

In the treatment of acute rheumatism, diaphoretics are very commonly employed, and they are undoubtedly sometimes of much service. The advantages, however, arising from copious sweating in this disease, are generally but temporary. It mitigates, for awhile, the violence of the pain, but is apt to produce much debility, and to render the system exceedingly sensible to the influence of atmospherical vicissitudes. Gentle diaphoresis is not liable to this objection; "and the employment of antimony, in conjunction with calomel and purgatives; or of antimony or ipecacuanha with opium in moderate doses, so as to produce a favourable determination to the surface, is entitled to our fullest regard in this disease."*

Some writers speak very favourably of the employment of diaphoretics in gout. It will certainly always be useful to preserve a moisture and comfortable temperature of the skin; but profuse sweating can seldom be of advantage, and must often do harm by increasing the susceptibility to the influence of atmospherical changes. Medicines of this class, as is observed by Dr. Scudamore, are also apt to weaken the digestive

* Scudamore on the Nature and Cure of Gout and Rheumatism.

organs, a circumstance which is to be particularly avoided in this disease. Whether gout be primarily seated in the stomach or not, it is certain that it is invariably attended by much derangement of the digestive functions, and it is therefore a matter of some importance, when we wish to excite a diaphoresis, to use such articles of this class as have the least tendency to weaken the powers of the stomach. When the skin is hot and dry much relief may be obtained by sponging the body with tepid vinegar and water, by cool drink, and a moderate temperature.* I have known a gentleman who always, in his attacks of gout, derived much advantage from a weak infusion of the eupatorium perfoliatum, a plant which, along with its diaphoretic, possesses considerable tonic powers.

In no class of diseases are diaphoretics more certainly useful than in the bowel affections. Vogeler, Stoll, Akenside, and Richter, were among the first who particularly recommended sweating in the cure of dysentery. More recently, Dr. Moseley has bestowed the highest encomiums on the sudorific plan of treating this affection. He affirms, "that the intermittent fever is not cured with more certainty by Peruvian bark, than dysentery by diaphoretics."†

As this disease is essentially connected with a congested and inflamed condition of the vessels of the intestinal canal, and as there exists a very intimate relation between the cutaneous capillaries and those of the internal organs, it is obvious, from the general effects of diaphoresis, that it must prove salutary in this affection. It will not only act as a general depletory measure, but also, in an especial manner, derive from the vessels of the affected parts, and thus aid very

* Scudamore on the Nature and Cure of Gout and Rheumatism.

† Treatise on Tropical Diseases.

materially in the reduction of the disease. The influence of the morbid condition of the cutaneous exhalents on those of the bowels, and vice versa, is often manifested in a very conspicuous way. We observe, for instance, dysentery, diarrhœa, and inflammation of the bowels to ensue from the sudden suppression of perspiration; and on the contrary, these diseases, from whatever cause they may arise, are almost invariably attended with a dry skin. By exciting the cutaneous emunctories in these affections, therefore, we break the chain of morbid actions, equalize the circulation, and give an exit to those recrementitious matters which nature designs to be cast off by the skin, and the retention of which cannot but prove injurious to the animal economy. Useful, therefore, as the operation of appropriate diaphoretics evidently must be in dysentery, general experience does, nevertheless, not warrant us in attributing to them all the efficacy in this disease which some writers, and particularly Dr. Moseley, have ascribed to them. In cases which arise from the sudden application of cold to the body, sweating is undoubtedly our chief remedy. In the ordinary autumnal dysenteries, however, or in such as arise from the influence of marsh miasmata, our principal attention must be directed to the biliary organs, and to evacuations from the intestinal canal. After the contents of the bowels have been sufficiently evacuated by mild mercurial purgatives, and bleeding premised if the febrile excitement run high, diaphoretics are always highly useful. For this purpose small doses of opium, ipecacuanha and calomel answer exceedingly well. This combination tends at once to allay the local irritation and pain of the bowels, to correct the biliary secretion, and to determine the circulation to the surface and excite diaphoresis.

What has just been said of the utility of diaphoretics in dysentery, may be applied with equal force to the treatment of diarrhœa. But as in this disease the intestinal exhalents are rather in a relaxed than in an inflamed state, diaphoresis is not often adequate of itself to give substantial relief. In addition to those remedies which excite the cutaneous emunctories, and determine the circulation to the external surface, it is generally necessary, also, to resort to such means as are calculated to restore tone to the intestinal exhalents; such as astringent and absorbent remedies. Where the diarrhœa depends on vitiated secretion, either of the biliary organs or intestinal glands, neither sweating nor astringents are of much service, unless they are aided by alterative doses of mild mercurial remedies, and gentle laxatives.

In the treatment of cholera infantum, considerable advantage may be obtained by exciting the action of the skin. Here, however, we can seldom employ diaphoretic remedies, on account of the extreme irritability of the stomach, characteristic of this disease; and we are therefore obliged, for this purpose, to resort to external means, such as stimulating or mild rubefacient frictions, the warm bath, flannel rollers applied tightly round the body, &c. The application of a broad flannel roller round the abdomen, is especially useful in the chronic form of this disease, as well as in protracted cases of diarrhœa and dysentery. "By this very simple expedient," says Dr. Chapman, "I have done great good in these complaints, having very much used it, as is well known, both in public and private practice, long before the appearance of Dr. Dewar's book, where it is particularly noticed."* Whatever plan of treatment

* Dr. Dewar's book, entitled "*Observations on Diarrhœa and Dysentery, &c.*" was first published in 1801. Dr. Chapman must therefore be mis-

we pursue in this disease, we shall derive essential advantage from the concomitant employment of such applications to the surface as are calculated to excite the action of the sub-cutaneous capillaries.

When we consider the intimate relation which exists between the functions of the skin and the kidneys, we would at once be led to expect advantage from the employment of diaphoretics in diabetes. Experience, however, does not furnish us with much evidence of their utility in this respect. A few cases are on record which yielded to the employment of such remedies. Cornick* and Werner† relate instances which were successfully treated with the pulvis ipecacuanha compositus, given in doses of from ten to thirty grains. But we know that opium has been used with success where no particular diaphoresis was produced, and we are therefore not fully warranted, in these cases, to ascribe the benefit derived from this powder to its diaphoretic operation. Dobson cured a case by the warm bath. As the skin is always remarkably dry and harsh in this disease, there can be little doubt that the warm bath or frictions would, in general, answer very well as auxiliary means.

Diaphoretics have also been employed in dropsy. It is, however, generally exceedingly difficult to excite sweating in affections of this kind, nor does the discharge, if it can be induced, often afford any particular relief. There is nevertheless very respectable testimony extant in favour of this practice, and it is said to be more especially useful in such cases of the disease as arise from obstructed perspiration, or appear as a consequence of measles, scarlatina, or rheumatism. Rich-

taken, as to his having used the flannel roller, "both in private and in public practice, before the appearance of Dr. Dewar's book."

* Medical Commentaries, vol. x.

† London Medical Journal, 1790, vol. xi. p. 221.

ter speaks well of the use of diaphoretics in cases of this kind.* Monro and Cotunnius employed Dover's powder and opium with antimonials, with success in dropsical affections;† and Frank‡ states, that warm bathing is one of our most efficacious means in cases connected with arthritic pains, or arising from repelled cutaneous eruptions. The ancients excited sweating, in dropsy, by burying the patient up to the neck in heated sand or ashes;§ and Lyson cured cases by placing his patients in rooms heated to a very high temperature. I have never resorted to diaphoretics in dropsy, but I have no doubt that they may often prove serviceable, especially in such cases as depend on a primary disorder of the perspiratory function. Richter says that they may be advantageously employed in conjunction with diuretics.

Before dismissing this part of my subject, it will be proper to say something concerning the rules that are to be attended to in administering these remedies. When we wish to excite sweat, the patient must be confined to his bed. If the pulse is strong, full, and tense, venesection is to be premised. The state of the general system is to determine the choice of the diaphoretics to be used. When the action of the pulse is vehement, antimonials, neutral salts, acidulated drinks, cool ablutions, &c. must be employed. Where no inflammatory excitement is present, recourse must be had to stimulating diaphoretics. When the sweat once appears, it should be supported by copious draughts of gently stimulating drinks. The best time for using diaphoretics is after digestion is completed; during the

* Specielle Therapie, tom. iii. p. 58.

† Observations on the Nature and Treatment of Dropsy.

‡ De Curand. Homin. Morbis, l. vi. p. 136.

§ Celsus de re Medicina, lib. iii. cap. 30.

performance of this function the emunctories of the skin are less disposed to action. When the sweat flows, purging and bleeding must be avoided, as they have a tendency to check it. The temperature of the room should be kept at a medium point; and sudden transitions from a warm to a cold air carefully avoided after the sweating has subsided.

THE ANTIMONIAL PREPARATIONS.

The preparations of antimony deserve to be placed at the head of this class of remedies. When taken in large doses they all produce vomiting; but exhibited in minute portions, they excite the action of the cutaneous vessels, and give rise to a free transpiration by the skin. It is well known that all emetic substances are capable of exciting sweat when given in nauseating doses. Nausea is invariably accompanied by great relaxation of every irritable part of the system. The cutaneous exhalents especially, are always greatly relaxed when under the influence of this feeling, and are thereby rendered more permeable to the watery portion of the blood. The diaphoretic operation of antimony does not, however, appear to depend altogether on its nauseating or relaxing effects; and in this respect it differs from the other diaphoretics taken from the class of emetics. It does not appear, for instance, that ipecacuanha has any tendency to excite the vessels of the skin when given in doses insufficient to produce nausea. Antimony, however, possesses a direct and specific influence upon the capillaries of the skin, as is demonstrated by its occasional effect of removing obstinate cutaneous diseases, when exhibited in minute doses. Its effects upon the cutaneous exhalents, when given so as not to excite nausea, appear to be simply an

increase of the insensible perspiration: when we desire to produce free sweating by the antimonial preparations, they must be given so as to cause some degree of sickness of the stomach. In all asthenic diseases the preparations of this metal are decidedly the best diaphoretics we possess. For, independently of the diaphoretic operation of tartarized antimony, it appears to possess the power of moderating the action of the heart and arteries,*—a virtue which must render it particularly adapted to cases of high febrile excitement. But whether it be endued with sedative powers or not, certain it is, that it has not the least tendency to augment febrile irritation, and may therefore be employed during the most violent arterial excitement. It has been alleged that antimonials do most good in fevers, when they do not produce any *sensible* evacuation by the skin, or obvious diuresis. From my own observations upon this subject, I am inclined to believe that there is some foundation for this opinion, and the circumstance does not appear to me to be altogether inexplicable. The function of perspiration is more or less deranged in all febrile disorders, from the very commencement, throughout their whole course. Torpor of the cutaneous exhalents would appear, in many instances, to be the very first link in the chain of febrile actions. This is especially the case in those fevers which depend on atmospheric vicissitudes. It is evident, therefore, that the greater portion of those recrementitious elements which nature is constantly casting off in the form of perspiration, remains mingled with the mass of the blood, and becomes an additional source of febrile irritation. Now, whatever contributes most to restore the natural action of the cutaneous emunctories, must also most effectually obviate this

* Balfour, Lenthois.

source of irritation to the heart and arteries. This appears to me to be the point upon which the explanation of the circumstance in question turns. When antimonials are given in very minute doses, they augment that insensible discharge of matter, the uninterrupted elimination of which, is essential to health. They promote the *natural* secretory action of the exhalents, and enable them to throw off, in a duly elaborated form, those substances which it is their function to separate from the general mass of the blood. When given, however, so as to produce copious sweating, they give rise, certainly, to a much greater discharge; but this discharge being more the result of relaxation of the exhalents, and a consequent readier transmission of the watery parts of the blood in a *crude* state, than of increased activity of the secretory excitement of these vessels, it does not so well answer those purposes in the animal economy which nature intends to fulfil by this emunctory. Sweat cannot be regarded as consisting entirely of recrementitious matter. It unquestionably contains a considerable portion of fluid, whose retention could not prove detrimental to the living economy. It is not so, however, with the matter that passes off by insensible transpiration. This being a product of regular secretion, and essential to the welfare of the animal economy, is necessarily wholly recrementitious. It is not to be supposed, however, that the regular discharge of the insensible transpiration will, in all instances, be as effectual as free sweating. The contrary is the fact. In all fevers connected with inflammation, especially of the internal organs, copious perspiration is beneficial, both as a general depletory measure, and as a powerful means of deriving the circulation from the affected organs to the surface. But in idiopathic fevers, at-

tended with a dry and constricted skin, and without any particular indication for direct depletion, more advantage is, in general, derived from antimonials when given in such doses as are just sufficient to restore the ordinary action of the perspiratory vessels, and to give softness to the skin, than by pushing them to the extent of producing free sweating.

In the account given of antimonial preparations in a former part of this work,* I have already mentioned their use in chronic cutaneous eruptions, in which, indeed, they often display very important powers. When employed in diseases of this kind, they are always prescribed in such doses as produce a slow and insensible operation on the system. They probably prove beneficial, chiefly by keeping up a regular discharge of the insensible transpiration by the skin.

As a diaphoretic, antimony is employed in various states of preparation. Formerly a great deal was thought of James's powder, a nostrum which, according to the analysis of Mr. Pearson, consists of phosphate of lime and antimony. M. Pulli, a French chemist, has made a very rigorous analysis of this substance; according to him, thirty-six grains of James's powder, contain fourteen grains of per-oxide of antimony, eight of phosphate of lime, nine of sulphate of potass, and seven of potass.† This preparation is recommended as peculiarly beneficial in febrile affections. Within a few years past, Dr. Cheyne of Dublin, has published some observations concerning its employment in hydrocephalic and apoplectic cases, from which it would appear that it possesses an obvious tendency to diminish the flow of blood to the head, and to remove the disposition to apoplexy.‡ In per-

* Vol. i. p. 64.

† Alibert, Elém. de Thérap. tom. ii. p. 363.

‡ Dublin Hospital Reports, vol. i. 1818.

sons predisposed to apoplexy, or frequently alarmed by the usual precursory symptoms of this disease; such as a sense of fulness in the head, vertigo, indistint vision, tinnitus aurium, &c., the long continued use of this remedy is said to prove highly useful. Dr. Cheyne recommends the following method of exhibiting James's powder, in cases of moderate determination of blood to the head. The patient is to begin with about two grains at bed-time, and to increase the dose by half a grain every night, until some sensible effect is produced upon the stomach, bowels, or skin. If it excite nausea, the dose must be reduced. When the skin becomes soft, or the bowels affected, the dose must not be further increased. Its use must be persisted in for a length of time. Dr. Cheyne says, that the addition of a little rhubarb to this powder renders it less apt to excite nausea. Drs. Crampton and Stoker, of Dublin, also mention its good effects in cases of this kind.

The pulvis antimonialis, which is an imitation of James's powder, is an excellent diaphoretic in febrile diseases. It is given in doses of from four to eight grains, repeated every third or fourth hour. When exhibited in larger doses it is apt, like all the antimonial preparations, to excite vomiting and purging. The kermes mineral, which is a hydro-sulphuret of antimony, is held in high esteem by the German and French physicians; and it is certainly entitled to much more attention than it appears to receive from the profession in England and in this country. It is better adapted than any other preparations of this metal, to cases that require a long continued use of antimonials, or where there is much weakness of the digestive organs. Its operation on the stomach is mild, and it may be given a long time without weakening this

organ, or bringing on an increased disposition to nausea or vomiting. It is said to be particularly beneficial in obstinate scrofulous eruptions of the skin. It is chiefly in chronic disorders of the eruptive kind, that its good effects have been particularly noticed. As an emetic, or diaphoretic in febrile disorders, it is at present seldom employed in any country. As an alterative, it is given in doses of from a half to one and a half grains, either alone, or in combination with guaiac, calomel, extract of cicuta, solanum dulcamara, &c. The precipitated sulphuret of antimony resembles kermes mineral, both in composition and medicinal properties. Its dose is from four to ten grains.

But of all the antimonial preparations, the tartar emetic is unquestionably the most valuable, in every point of view. It will seldom fail to produce diaphoresis when properly managed, and it is now almost the only preparation of this metal employed for this purpose. As a diaphoretic in febrile diseases, it is usually combined with some of the saline articles of this class. In union with nitre, it forms one of our most efficient refrigerent diaphoretics, and it is in this way that it is commonly prescribed for this purpose. When we take into consideration what has already been said concerning the sedative effects of this preparation, it must appear obvious that it is peculiarly calculated to do good in asthenic diseases. Given in doses of from one-twelfth to one-eighth of a grain, it has been known, in common with the other preparations of this metal, to produce excellent effects in chronic cutaneous affections. When employed for this purpose it may be advantageously combined with gum guaiacum, extract of cicuta, &c., or given dissolved in the infusions of sarsaparilla, solanum dulcamara, burdock, or sassafras-root. It is a singular fact

that tartarized antimony has its emetic powers greatly diminished by giving it in union with Peruvian bark. A knowledge of this circumstance may sometimes be turned to much advantage in prescribing this latter substance in intermittents. Cases of this disease are occasionally met with, in which the bark appears rather to do harm than good, in consequence of a general inflammatory condition of the system. In such instances we may unite the tartarized antimony with the bark, and administer it to the extent of from one to two grains every three or four hours without producing vomiting, but with a manifest antiphlogistic operation. When exhibited with the bark in cases of this kind, it keeps up an agreeable moisture of the skin, reduces inflammatory action, and thereby favours the febrifuge operation of the cinchona.*

I have already noticed the employment of very minute doses of this preparation in phthisis pulmonalis.† One grain of it dissolved in six or eight pints of water, and used exclusively as a common drink, is stated by M. Lenthois to have proved successful in a number of cases in his practice. I have used it in this way, in cases of incipient phthisis with very obvious advantage. Perhaps the very large quantity of water which is taken in this way may contribute something to its good effects. A very free use of bland drinks, with abstemiousness, will often do more towards restoring health in chronic inflammatory affections than any other remedies we possess.

RADIX IPECACUANHÆ.—DOVER'S POWDER.

This article is but seldom employed by itself as a diaphoretic, nor does it appear to display any particu-

* Pfaff's System der Materia Medica, B. ii. p. 402.
† Vol. i. p. 75.

lar powers in this way. Its operation in augmenting the discharge by the skin depends, probably entirely on its relaxing influence by the nausea it creates. It does not, certainly, evince any manifest diaphoretic powers, unless it be given in nauseating doses. Combined, however, with opium and vitriolated tartar, it helps to form one of our most valuable diaphoretics—the pulvis ipecacuanha compositus,* or Dover's powder, as it is usually called. "In this composition," says Dr. Paris, "the opium is so modified that it may be given with perfect safety and advantage in inflammatory affections accompanied with increased vascular action. It would seem that whilst the opium increases the force of the circulation, the ipecacuanha relaxes the exhalent vessels, and causes a copious diaphoresis. The sulphate of potass is also an important ingredient, for experience has fully proved that ipecac. and opium in the same proportions, have not so powerful an effect without it." It seldom fails, by proper management, to excite free diaphoresis, and in a variety of diseases, its effects are peculiarly serviceable. In the treatment of dysentery, after the bowels have been sufficiently evacuated by mild purgatives, it generally proves highly beneficial. It not only determines the circulation to the surface, but also allays the pain and irritation of the bowels by its anodyne properties. In obstinate cases it may be very advantageously combined with small doses of calomel, and given at regular intervals until the gums become tender.

In cholera infantum I have frequently employed small doses of calomel and Dover's powder, with the most favourable results. A quarter of a grain of the former with half a grain of the latter article may be given every half hour, to an infant under two years of

* This composition consists of ipecacuanha one part, opium one part, and sulphate of potass eight parts.

age. I can confidently assert that I have much more frequently succeeded in arresting the vomiting and purging with these minute doses, than with the free doses of calomel usually prescribed in this disease.

In diarrhœa, too, a mixture of calomel and Dover's powder, after the operation of a gentle purgative, forms one of our most efficient remedies.

In chronic inflammation of the mucous membrane of the bowels, small doses of Dover's powder often produces very excellent effects. It may also be very beneficially administered in dyspepsia, attended with much gastro-intestinal irritation. In chronic catarrh, and bronchial consumption, this powder, when administered in small and repeated doses, often affords very considerable relief.

In arthritic affections, this composition is particularly useful. Given in small doses, two or three times in twenty-four hours, it proves a valuable remedy in the declining stage of acute rheumatism. It may, indeed, be employed with advantage in every variety of symptomatic fever, attended with much pain and a dry skin. I know of no remedy more useful in peripneumonic inflammations than this one, after proper venesection has been made. It at once assuages the pain and promotes diaphoresis and expectoration. Drs. Brook, Percival, Cheyne, and Crampton, speak highly of its efficacy in hydrocephalus. Of its powers in this disease I can say nothing from my own experience; I must confess that I should not be inclined to employ it, since opium, in whatever shape it be given, has a manifest tendency to increase the flow of blood to the head. Where the cephalic affection is purely sympathetic, depending on gastric irritation, opium given in this way may, perhaps, be serviceable. But in idiopathic hydrocephalus there would be reason to apprehend danger from its employment.

This powder has also been successfully used in the cure of diabetes.* It does not appear, however, that its virtues in this respect are superior, or, indeed, even equal to simple opium. Favourable accounts have likewise been given of its effects in dropsy.†

It is given in doses of from five to fifteen grains. When taken with the view of exciting sweat, the patient should be cautioned not to drink any thing for at least one hour after the powder is taken, as it is very apt to produce vomiting when this precaution is not attended to.

NITRAS POTASSÆ.

The nitrate of potass, or saltpetre, crystallizes in white, semi-transparent, six-sided, and flattened prisms, terminated, for the most part, by dihedral summits. It has a sharp, slightly bitter, and cool taste. It is soluble in seven parts of cold water, and in its own weight at 212°. Alcohol has no action whatever on it. It is not changed by exposure to the air. It is decomposed by alum, sulphate of magnesia, sulphuric acid, the sulphates of zinc, copper, and iron, and partially by the sulphate of soda at the temperature of 32°.

When nitre is taken in doses of from ten grains to fifteen, its effects are gently diaphoretic, diuretic, refrigerent, and sedative. In doses of from thirty to sixty grains it generally proves aperient; and when swallowed in much larger qnantities, its effects are those of an acrid poison, producing violent and obstinate vomiting, bloody stools, with all the symptoms of gastric inflammation, convulsions, and death. Taken in very large doses, it often acts particularly and violently on the

* Cornick, Med. Comment. vol. x. Werner, Lond. Med. Jour. 1790, vol. xi. p.p. 111, 221.

† Dr. Chapman's Therapeutics, vol. i.

nervous system, giving rise to "a sort of intoxication, palsy, convulsions, and other nervous symptoms."* Dr. John Butler relates the case of a woman who became affected with a convulsive disease resembling chorea, after having swallowed by mistake two ounces of nitre.†

The diaphoretic effects of nitre are not very manifest, its operation in this way being commonly confined to an increase merely of the insensible perspiration. It possesses, however, an obvious tendency to moderate the action of the heart and arteries, and to diminish febrile heat; and it is consequently one of our most common and useful remedies in diseases attended with high vascular excitement. When employed for this purpose it is usually combined with emetic tartar, to which, occasionally, a small portion of calomel is added. The emetic tartar is a very important addition. It increases its diaphoretic operation, and adds very considerably to its general antiphlogistic powers. In fevers attended with derangement of the biliary organs, the nitre and emetic tartar are very advantageously combined with small doses of calomel.‡ By such a composition we excite at once the secretory functions of the skin and the liver, and moderate the action of the heart and arteries. In bilious remittents I commonly employ this medicine until the gums become slightly affected, interposing occasionally a saline purgative. As soon as this effect is induced, the disease often assumes a perfect intermission, or at least becomes much more mild and manageable in its progress. In simple

* Orfila, Directions for the Treatment of Persons who have taken Poison, p. 65.

† Edinburgh Med. and Phys. Jour. No. 53.

‡ ℞.—Sal. nitri. ʒss. tart. antim. gr. i. calom. ppt. iv. Divide in pulv. x. one to be given every two or three hours.

inflammatory fevers, the calomel should be omitted. Dr. Wilson Philip speaks very highly of the effects of nitre in counteracting a tendency to inflammation in the advanced stages of indigestion. "Of all the medicines," he observes, "which I have employed to counteract the inflammatory tendency in the second stage of dyspepsia, I have found none equal to the nitrate of potass taken in a considerable quantity of water, in which a little gum had been dissolved."* Selle,† Richter,‡ and others recommend a saturated solution of nitre in brandy as one of the most effectual remedies in hæmoptysis. A table-spoonful of it is to be given every half hour. Of late years, indeed, this article has been particularly extolled by some eminent Italian and French physicians, as a remedy for spontaneous hæmorrhage. In uterine hæmorrhage, especially, it often affords prompt and very decided relief. I have employed it in a few instances of hæmoptysis, attended with a warm and dry skin, and a strong and full pulse, with unequivocal advantage. From fifteen to twenty grains should be given, and repeated at intervals of from thirty minutes to two hours, according to the exigencies of the case.

In hydropic affections, attended with a full and vigorous pulse, and a warm and dry state of the skin, the nitrate of potass has been employed with decided advantage. It is most apt to prove beneficial in those cases which result from suppressed perspiration after an attack of scarlet fever or measles.

A solution of nitre in vinegar, is strongly recommended by Mr. Patterson as a remedy for scurvy. Mr. Cameron also employed this solution in a number of

* Treatise on Indigestion, p. 222.

† Med. Clin.

‡ Specielle Therapie, B. iii. s. 302.

scorbutic cases which occurred among the convicts on board the *Ferguson* transport, with the most satisfactory results. Eight ounces of nitre were dissolved in about sixty ounces of vinegar, and of this solution, an ounce was given from three to eight times daily.

When nitre has been taken in such quantities as to threaten dangerous consequences, the best treatment, according to Orfila, "consists in causing the patient to swallow a large quantity of sugar and water, of warm or cold water, or of a decoction of linseed or mallows; by this means the stomach is filled, vomiting caused, and the poison ejected." If symptoms of inflammation ensue, bleeding, together with leeching and blistering of the abdomen, and copious draughts of mucilaginous drinks, must be resorted to.

PREPARATIONS OF AMMONIA.

The carbonate of ammonia has a very considerable tendency to increase the activity of the cutaneous exhalents. By itself, however, it is rarely employed as a diaphoretic; but saturated with the acetic or citric acids, it forms a pleasant and very useful medicine for this purpose. These preparations are usually given in doses of a table-spoonful every hour or two, and they seldom fail to excite a flow of perspiration, when assisted by warm and gently stimulating diluents. They seem to hold a middle rank between the relaxing or refrigerent and the stimulating diaphoretics. They do not stimulate or heat the system, nor yet depress or relax it in their primary operation. They tend certainly, in a manifest manner, to moderate febrile excitement, but this appears to be the result simply of the increased discharge by the skin. In fevers attended

with a dry and hot skin and a very irritable state of the stomach, the acetate of ammonia, or spiritus mindereri, is peculiarly beneficial. It allays the irritability of this organ, and by promoting perspiration, moderates at once the action of the heart and arteries, and the febrile heat. When the arterial excitement is not of a very high grade, and the skin is torpid, a small portion of laudanum may be advantageously united with this preparation. In cases of this kind I have known the aqua ammonia, given in warm wine whey, in the proportion of about forty drops of the former to one pint of the latter, to produce excellent effects.

The acetate of ammonia is an excellent palliative in dysmenorrhœa, and uterine pains from other causes. I have frequently prescribed it in the former complaint, and in general with speedy and very decided relief.

Formulæ.

℞.—Spirit. mindereri ℥v.
Spirit. nitri. dulc. ℥ss.
Vin. antimon. ʒi.
Syrup. ℥ii.—M. Dose, a table-spoonful every hour or two. This is an excellent antiphlogistic diaphoretic in febrile affections.

EUPATORIUM PERFOLIATUM.

This plant is indigenous to the United States, and well known by the various familiar names of boneset, crowswort, vegetable antimony, thoroughwort, &c. Its stem is erect, round, hairy, branching at the top, and rises to the height of from two to five feet. The leaves are horizontal, serrated, rugose, and gradually tapering off from the middle, where they are perforated by the stem to the extremities. The flowers are white, collected into large corymbs at the termination of the branches, and appear in July and August. It grows in low meadows and marshy places.

The whole plant is intensely bitter, "without astringency or acrimony." Its bitter extractive, in which the medicinal qualities of the plant appear to reside, is equally soluble in water and alcohol. The decoction forms copious precipitates with muriate of tin, nitrate of mercury, nitrate of silver, and acetate of lead. It contains a very small portion of tannin, as is evinced by the solution of isinglass forming a slight precipitate with its tincture.* From Dr. Anderson's experiments it would appear that the leaves are the most active parts of the plant.†

The eupatorium perfoliatum possesses important medicinal properties. When taken in large doses it excites vomiting and purging; in smaller doses it produces copious perspiration, and acts as a gentle tonic. It has been much recommended by some practitioners of the United States as a remedy in intermittents. Dr. Anderson states, that this remedy was used in nearly every case of intermittent that occurred in the New York Alms-house in 1812, instead of the Peruvian bark, and that it uniformly proved successful. I do not doubt that it has sometimes proved successful in this disease; but the result of my own experience with it, does not lead me to form a very high opinion of it in this respect. I have known it to remove the disease in a few instances, by producing vomiting and copious perspiration. But in the great majority of cases in which I have tried it, no manifest advantage was obtained. It has also been administered with very good effects in remitting fevers; and we have the testimony of Dr. Bard and Dr. Hosack in favour of its usefulness as a diaphoretic, in yellow fever. As a diaphoretic it may generally be

* Bigelow's American Medical Botany, vol. i. p. 34.

† Inaugural Dissertation. New York, 1813.

employed with much benefit in catarrhal fevers. In slight cases of this kind, a weak infusion of it, drank warm on going to bed, will often remove the disease very speedily. It but very slightly increases the action of the heart and arteries, and may therefore be employed with advantage in every variety of inflammatory affection. In acute rheumatism the infusion of it, used as a common drink, produces very excellent effects. It seldom fails to excite a moderate diaphoresis, and by this effect to procure considerable relief to the patient. It can, however, be considered only as an auxiliary to more efficient remedies, and as such it is unquestionably an article of considerable consequence. In the epidemic typhoid pneumonia of the winters of 1812, 13, and 14, the eupatorium was a good deal employed by some practitioners, and its effects are stated to have been very salutary. It has also been recommended as a good medicine in obstinate cutaneous diseases. Dr. Barton speaks well of its powers in affections of this kind. Dr. Thacher says, that in anasarcous swellings of the extremeties, depending on general debility, the alcoholic tincture of this plant "may be safely recommended as an excellent tonic."* Dr. Burgon, of Bucks county, in this state, has found it very useful in cases of anorexia consequent to drunkenness. "In such cases," he says, "I have used a cold infusion with evident benefit, and I prefer it to any article I have hitherto employed; it very speedily restores the tone of the stomach, and no unpleasant effects follow its administration."† Dr. Bigelow, also, adds his testimony in favour of its good effects as a tonic in loss of appetite and other dyspeptic symptoms, "as well as in general debility of the system." I have found

* The American Dispensatory.

† American Medical Recorder, vol. iii. p. 331.

it particularly useful in very old people labouring under indigestion; it gives tone to the stomach, and renders the skin soft and comfortable. The warm infusion, as is observed by Dr. Bigelow, is an excellent substitute for chamomile tea, to promote the operation of an emetic.

The powdered leaves are given in doses of from ten to twenty grains, as a tonic or diaphoretic; or an infusion made by pouring a quart of boiling water on two drachms of the leaves, may be used in draughts of about a gill every three or four hours.

For excellent figures and descriptions of this plant, see Dr. Bigelow's American Medical Botany, and Dr. Barton's Vegetable Materia Medica of the United States.

ASCLEPIAS TUBEROSA.

This plant is a native of the United States, growing in dry and sandy soils, and well known as a domestic remedy by the familiar names of butterfly weed and pleurisy root. The root, which is the part employed for medicinal purposes, is large, fleshy, spindle-shaped, or branched, of a brownish colour externally, and white and striated internally. It sends up numerous round, and generally decumbent stems, very hairy, and of a reddish colour. The leaves are scattered, narrow, oblong, hairy, waved at the edge, having footstalks at the bottom, but none at the top. The flowers, collected into umbels at the top, are of a bright orange colour, and appear in July and August.

The root of this plant has a slightly bitter taste without any traces of astringency, and yields its active principles entirely to boiling water. Its effects upon the system are those of a diaphoretic and expectorant,

without in the least heating the system, or materially exciting the action of the heart or arteries. It produces a gentle tonic operation, and when given in large doses proves mildly laxative. It is, indeed, one of our most useful indigenous medicinal vegetables, being applicable in every case where diaphoresis and expectoration are to be promoted. In pleurisy, catarrh, and other pulmonary complaints, this root often evinces highly beneficial powers. The late Dr. Barton spoke in favourable terms of its employment in affections of this kind; and Dr. Benjamin Parker, of Bradford, Massachusetts, as is stated by Dr. Thacher, has been led, from a very extensive experience with this root, to regard it "as possessing the peculiar and almost specific quality of acting on the organs of respiration, powerfully promoting suppressed expectoration, and thereby relieving the breathing of pleuritic patients in the most advanced stage of the disease.* He gave it in the form of a strong infusion, in doses of a tea-cupful every two or three hours. We have also the evidence of Dr. Bigelow in favour of the remediate powers of this article. "I am satisfied," says he, "of its utility as an expectorant medicine, and have seen no inconsiderable benefit arise from its use as a palliative in phthisis pulmonalis.†

While practising in Lancaster, I frequently employed this remedy in catarrhal affections, and generally with manifest advantage. I have also witnessed its good effects in pneumonia and phthisis pulmonalis; and in one case of acute rheumatism I prescribed it, with much apparent benefit. The asclepias has also been recommended as a useful medicine in the fever, diarrhœa, and other distressing symptoms which frequently

* Thacher's Dispensatory.

† American Medical Botany, vol. ii. p. 65.

accompany dentition. Dr. Burgon, of Bucks county, speaks very highly of its powers in this respect. "It is peculiarly adapted to the diseases of children," he says, "as they freely take it, from its not possessing any disagreeable taste or smell." He recommends the following mode of administering it. Boil two drachms of this root, in a pint of fresh milk, down to three gills. An ounce of this is to be given two or three times in twenty-four hours. It very seldom fails to excite a copious perspiration, and at the same time proves gently laxative.* Dr. Burgon recommends it also in cholera infantum, and marasmus.

This root may be given either in substance or in decoction. The latter is, however, considered the best mode of administering it. About a gill of the strong decoction may be taken two or three times a day. The powder is given in doses of from twenty to forty grains.

GUAIACUM OFFICINALE.

The guaiacum officinale is a considerable tree, indigenous to the West Indies and the Brazils. Both the wood and the resinous substance which exudes from incisions made into its trunk, possess important medicinal virtues. The wood is compact, heavy, of a yellowish colour, and has but little smell, and a bitterish and slightly acrid taste when chewed. The gummy resinous substance, or gum guaiacum, comes to us in large irregular masses of a greenish-brown colour; it is brittle, and exhibits a shining uneven fracture. When reduced to powder it is of a grayish-white colour, becoming greenish on being left exposed to the air. It melts in a moderate degree of heat, and be-

* American Medical Recorder, vol. iii. p. 334.

comes soft and tough when chewed. It has a sweetish bitter taste, and produces a peculiar sensation of acrimony in the fauces when swallowed. It has a very faint and peculiar balsamic odour, and when thrown upon hot coals evaporates in fumes, which are exceedingly irritating to the lungs. About nine parts out of a hundred of its substance are dissolved by water; æther dissolves about forty parts in the hundred, and alcohol ninety-five. It is readily soluble in the solutions of the alkalies and in their carbonates. The mineral acids dissolve, and at the same time decompose it, being therefore incompatible with it.* Nitric acid changes the tincture of guaiacum to a beautiful blue colour; which, by adding water, lets fall a copious precipitate of a light blue, but which soon turns to a green, and finally to a greenish-white colour. With concentrated sulphuric acid it forms a dark carmine red solution, which throws down a lilac coloured sediment on adding water. According to Mr. Hatchett, gum guaiacum is a peculiar substance, possessing neither the characteristics of a resin nor of a gum.

Gum guaiacum acts as a pretty strong and general stimulant upon the system. It excites the action of the heart and arteries; increases the heat of the body; and promotes the serous excretions, especially those from the skin and lungs. When taken in very large doses it produces nausea, anxiety, purging, with violent pains in the abdomen, and deep sleep. Its continued use has been known to excite a gentle salivation.†

Guaiacum was first introduced into medical practice as a remedy in syphilitic affections. Many of the most celebrated medical writers of the preceding century recommend it as one of our most useful articles in

* Paris's Pharmacologia.

† Burdach's Arzneimittel. B. iii. p. 163.

cases of this kind. At present, however, it holds but a very subordinate rank among our anti-syphilitic remedies. Mr. Pearson, who had ample opportunities of estimating the value of medicines of this kind, says, that "guaiacum will often suspend the progress of certain secondary symptoms of lues venerea, *for a short time;* such as ulcers of the tonsils, venereal eruptions, and even nodes; but that he never saw one single instance in which the powers of this medicine eradicated the venereal virus."* In the treatment of rheumatism also, this article has been long considered as peculiarly serviceable; and it is unqustionably a remedy of very considerable value in this disease. In the acute form of this painful affection, after the inflammatory symptoms have been considerably subdued, and wandering pains and swellings of the joints continue to harass the patient, the volatile tincture of guaiacum will often afford great relief. It is occasionally also prescribed in gout; but its employment in this disease can only be resorted to with propriety during the intervals of the fits, as it is much too heating to be given in the paroxysm.† In gouty affections of the stomach, so frequently experienced in the irregular form of the disease, the volatile tincture of guaiacum is said to prove very serviceable. Many authors speak very favourably of the use of this remedy in old scrofulous affections and in various diseases of the skin. Mr. Pearson says, "I have given the decoction of guaiacum with the best effects, to a great number of patients, in cutaneous diseases, in ozœna, and scrofulous affections of the membranes and ligaments." In combination with sulphur, antimony, mercury, dulcamara, &c. it has been recommended as an excellent remedy in tinea

* On the Effects of various Articles in the Cure of Lues Venereæ, &c.
† Scudamore on Gout, p. 189.

capitis, herpes, and psora. It is also much prescribed in affections arising from the influence of mercury; and in such cases I have had several striking examples of its usefulness. In chronic catarrh, attended with a very copious mucous expectoration, important benefit may sometimes be derived from small doses of g. guaiacum in combination with minute portions of tart. antimony. (Double. Jour. Gener. de Med. tom. xix. p. 278.) It has also been employed with entire success in anasarca depending on rheumatism. In hæmorrhoidal affections, attended with a sluggish state of the system, and torpor of the bowels, guaiacum in conjunction with sulphur, is said to be a remedy of very considerable value. The tincture of guaiacum has also been recommended in gutta serena, and in painful menstruation. Dr. Dewees, of this city, has been long in the habit of employing it in this latter affection; and he speaks with much confidence of its efficacy in this respect.

Sapo guacicinus.—According to the Prussian Pharmacopœia, this preparation is made by dissolving one part of caustic potass in two parts of water. This solution is to be heated, and as much powdered gum guaiacum added as it will dissolve. It is then strained and slowly evaporated until it acquires a consistence proper for forming it into pills. The German physicians speak very favourably of this preparation as a remedy in rheumatism, lithiasis, and torpor of the portal circulation.

The dose of gum guaiacum in substance is from gr. x. to ʒss. The tincture is taken in doses of from one to two tea-spoonfuls. It may also be very conveniently given in the form of an emulsion, made by rubbing the powdered gum with the yelks of eggs, and gradually adding water to it.*

* "*Jesuit drops.* This is nothing more than the elix. anti. venereum of

Formulæ.

℞.—Rasuræ ligni guaiaci.
R. sarsaparillæ āā ℥i.
— liquiritiæ ℥ss.
P. sem. fœnicul. ʒi.
Aq. bullientis ℔ii.—Boil for half an hour, then strain. Dose, a wine-glass full four or five times daily.

℞.—Liq. guaiaci. ℥iii.
Stip. dulcamar.
Rad. graminis āā ℥ss.
Sem. fœnicul. ʒi.
Aq. bullientis ℔ii.—Boil down to one pint, and strain. Dose, a wine-glass full three or four times daily.

℞.—Pulv. gum. guaiaci.
Flor. sulph. āā ℥ss.
Carbonat. potassæ ʒi.—M. Take a tea-spoonful three times daily.

℞.—Gum. guaiaci. ʒiii.
Mucilag. g. arab. ʒiv. Terent. affund.
Sensim. aq. menth. pip. ℥ivss.
Syrup. zingiberis ℥ss.—M. Take a table-spoonful three or four times daily.

DAPHNE MEZEREUM.

This is a low shrub, growing spontaneously in the high and woody parts of Spain, France, and the southern districts of Germany. The bark is the only part of this shrub employed for medicinal purposes. It is thin, light, externally of a reddish grey, and internally of a yellowish white colour; the parenchyma or internal substance of the bark is of a dark green colour. It has an acrid and burning taste, but no smell. It contains, besides extractive matter, an acrid resinous substance, which, according to Pfaff, bears a strong resemblance to the active principle of cantharides, to which the name of *daphnin* has since been given.* The bark of the root is much more active than that which is obtained from the stem or branches.

Quincey, consisting of *guaiacum, balsam of copaiva*, and oil of sassafras, made into a tincture by spirit."

* System der Materia Medica, B. iii. p. 195.

Applied to the skin in a fresh state or in powder, moistened with spirits or water, it produced inflammation and vesication, attended with a good deal of burning and smarting in the part. Taken internally in large doses it occasions vomiting, violent pain in the stomach, inflammation, gangrene, and death. In smaller but full doses, it sometimes produces heat in the stomach, nausea, vomiting, griping pains, diarrhœa, vertigo, headach, weakness, anxiety, convulsions, &c. It affects the respiratory organs, giving rise to pain in the breast, difficulty of breathing, cough, and hoarseness. It promotes the secretory action of the kidneys; and has been known to bring on bloody urine. It also increases the activity of the cutaneous exhalents.*

The mezereon bark has been much recommended in a variety of affections. In obstinate diseases of the skin it was formerly a good deal prescribed; and it has been particularly commended for its powers in affections depending on a syphilitic taint, or in such as arise from the injurious influence of mercurial remedies. Its reputation in this respect does not, however, appear to be very great at present. Mr. Pearson states, that "from all that he has been able to collect in the course of many years' observation, he feels himself authorized to assert unequivocally, that the mezereon has not the power of curing the venereal disease in any one stage or under any one form." Some later writers have spoken more favourably of its powers in affections of this kind, and especially in the mercurial diseases. It has also been recommended in chronic cutaneous eruptions. Dr. Cullen states, that he found it successful in diseases of this kind; and Dr. Pearson knew it to confer temporary benefit in an instance or two of lepra. I have not had a great deal of experience with this remedy

* Burdach, Arzneimittellehre, B. iii. p. 169.

myself, but from its effects in some old syphilitic complaints, in which I prescribed it, I am inclined to attribute to it considerable remediate virtues. Dr. Withering states, that he has known this bark to produce very good effects in difficulty of swallowing. He mentions one case of this kind, of very long standing, which was entirely cured in two months by chewing the mezereon root.

Parry states, that he has derived decided advantage from the external application of a decoction of this root in nodes, rheumatic indurations, and cancerous ulcers. Hill, also, speaks very favourably of this application in affections of this kind. I have employed cataplasms made with the decoction in chronic swellings of the knee-joint with evident benefit.

The best mode of exhibiting this remedy is in decoction. Half an ounce of the bark, with the same quantity of liquorice root, may be boiled in three pints of water down to a quart, and given in doses of half a gill four times a day.

Formulæ.

℞.—Cort. mezerei
Stip. dulcamar āā ʒiss.
Rad. arcti lappo
—— sarsparil āā ℥iss.
Aq. ferv. ℔ii.—Boil down to one pint. Dose, a wine-glass full three times daily.

SMILAX SARSAPARILLA.

This is a climbing plant growing in low and humid situations in various parts of South America, and in the western parts of the United States. The root, which is the only part employed in medicine, is composed of a great number of long and slender creeping radicles, of a yellowish-brown colour externally, and white within. It

has a slightly bitter and mucilaginous taste, but no odour. It contains fecula, in which its active properties appear to reside, and vegetable albumen. Boiling water readily and completely extracts its active principles.

The medicinal character of this root has been very variously represented. According to some writers, it possesses no powers whatever; whilst others represent it as being endued with highly valuable properties. When first introduced into practice it was strongly recommended as a remedy in venereal affections. It did not, however, long sustain its character in this respect. Cullen thought it unworthy of a place among the materia medica; and Pearson declares, that "he feels himself authorized to assert, that the sarsaparilla has no power of curing any one form of the lues venerea. Lately, however, it has again come into notice, and many of the most respectable practitioners of the present day employ it, and speak of it as a medicine of very useful powers in complaints of this kind. It is thought to be particularly useful in those chronic venereal disorders which resist the influence of mercurial remedies, as well as in those affections which occasionally arise from the action of mercury. My own experience with this root has not been extensive; but from what I have seen, I am inclined to regard it as capable of affording considerable advantages, when employed as an auxiliary to other more efficient remedies.

It has also been recommended in scrofulous and rheumatic affections, and in some of the chronic diseases of the skin. Quarin regarded the decoction of sarsaparilla as the most useful remedy we possess in gout, when administered conjointly with antimonial remedies. Sydenham also considered it useful in the declining stage of this affection; and Scudamore says,

it will sometimes prove beneficial during the state of convalescence. It is usually given in union with other articles of the same kind, particularly with guaiacum, mezereon, sassafras root, &c.*

According to the experiments of Mr. Battley, of London, it appears that the active properties of sarsaparilla reside exclusively in the cortical part of the root, and that its virtues may be effectually extracted by infusion in cold water. The woody or central part possesses no medicinal powers whatever; and it follows, as Mr. Battley observes, "that when the cortical part has been materially injured, or when in the preparation of the medicine the ligneous part of the root has been chiefly regarded, the remedy so prepared must be, in a great measure, if not wholly, inefficacious."†

The decoctum sarsaparillæ compositum of the London and Dublin Pharmacopœias, is taken in doses of from four to six ounces three or four times a day.

The *compound fluid extract of sarsaparilla* is a neat and very excellent preparation. It possesses all the active properties of the root, in a highly concentrated state; a table-spoonful being equivalent to half a pint of the ordinary decoction. I have used it in several instances, with decided benefit. From the smallness of the dose it is peculiarly adapted for administering this remedy to children. This preparation was, I believe, introduced by Mr. G. W. Carpenter, druggist, of this city, to whom we are indebted for several new and valuable medicinal preparations; and whose enter-

* The once celebrated Lisbon diet drink is made according to the following formula:

℞ R. sarsaparillæ, R. chinæ, āā ℥i. nucum juglandis cortice siccatarum, No. xx. antimonii sulphureti ℥ii. lapidis pumicis pulverizati ℥i. aquæ distillatæ ℔x. To be made into a decoction.

† London Medical Repository, for Feb. 1819.

prise and intelligent zeal in the prosecution of pharmaceutic inquiries, entitles him to the confidence and patronage of the profession.

LAURUS SASSAFRAS.

The laurus sassafras is a very common tree throughout every part of the United States. Its bark has a fragrant smell, and an agreeable aromatic taste. It contains a large proportion of an essential oil, upon which its taste and odour as well as its medicinal properties appear to depend. It is said also to contain a small proportion of camphor and some resinous matter.* Its active principles are extracted both by alcohol and water. The watery infusion is red, possessing the peculiar odour and taste of the sassafras, and changes to an olive green colour by the addition of sulphate of iron. The bark and pith of the young branches contain a great deal of mucilage. "A very small quantity of pith, infused in a glass of water, gives to the whole a ropy consistence, like the white of eggs. This mucilage has the uncommon quality that it is not precipitated, coagulated, or rendered turbid by alcohol."† This mucilage is an exceedingly good application in acute ophthalmia, and it is no less useful as a demulcent in catarrhal and dysenteric affections.

The sassafras was at one time held in very high esteem as a remedy in syphilis, cutaneous eruptions, scrofula, and rheumatism. At present it is not much employed in practce, but I am convinced from my own experience with it, that it is entitled to much more attention than it now receives. Alibert speaks very favourably of its virtues in rheumatic affections. He

* Pfaff's Mat. Med. vol. iv. p. 242.

† Bigelow's American Medical Botany, vol. ii. p. 145.

administered it frequently at the Hospital St. Louis, and it always appeared to him, he observes, to exert a manifest action on the cutaneous emunctories. He mentions a case of chronic rheumatism which yielded to the infusion of sassafras, after a great variety of other remedies had been tried ineffectually. He speaks also of two cases of gout in which the sassafras was employed with complete success.* I have known the long continued use of an infusion of this article effectually to cure a case of inveterate rheumatism.

Sassafras enters as an ingredient into the decoctum sarsaparilla comp. It is generally employed in the form of an infusion; but the oil is the most efficient, and therefore the best preparation. When this is used it should be rubbed up with mucilage, sugar, and water. The infusion of the flowers is also frequently employed.

XANTHOXLYUM FRAXINEUM.—PRICKLY ASH.

The prickly ash is a tall shrub, indigenous to the United States, in many parts of which it grows in considerable abundance. The bark is aromatic and very pungent to the taste, the pungency being perceived only after it has been held in the mouth for some time. The leaves also are considerably aromatic, but have not the pungency of the bark, and resemble those of the lemon-tree in odour. "The rind of the capsule is highly fragrant, imparting to the fingers, when rubbed between them, an odour much like the oil of lemons. The odorous portion is an essential oil residing in transparent vesicular points on the surface of the capsules, and about the margins of the leaves. The acrimony which resides in the bark, has its foundation in a different

* Alibert, Nouveaux Elémens de Thérapeutique, tom. ii. p. 302.

principle, being separated by decoction, but not by distillation."*

The bark of this shrub is a warm stimulant and diaphoretic, being analagous to mezereon and guaiacum both in its sensible and medicinal properties. In this country it has been a good deal employed as a remedy in chronic rheumatism, and I have no hesitation in saying, from my own experience, that it is a medicine of very considerable value in this complaint. Its continued use has been known to produce salivation. "A lady in Buckingham," says Dr. Burgon, "who had taken a considerable quantity of the tincture for rheumatism, was completely salivated by it, and challenged her physician with giving her mercury. I have heard much of its salivating, but have never witnessed this effect from its administration; chewing the capsules powerfully promotes the flow of saliva."† Dr. Bigelow states that he gave the bark of this shrub in doses of ten and twenty grains in rheumatism, with considerable advantage. "In one case," he observes, "it effectually removed the complaint in a few days;" but in some instances he found it entirely ineffectual.‡ I once employed this remedy in a case of rheumatism attended with an obstinate eruption on the skin, and succeeded perfectly in relieving both these affections. I had reason to believe that the disease depended on a syphilitic taint.

This article has also been recommended as an excellent remedy in malignant ulcers. For this purpose it is used both internally and externally. Several instances of its efficacy in this respect are related in the Medical and Physical Journal, and in the Transactions of the

* Bigelow's Amer. Med. Bot. vol. iii. p. 158.

† American Medical Recorder, vol. iii. p. 333.

‡ Amer. Med. Botany, vol. iii.

Medical Society of London. It has also been found very useful as a topical stimulant.

It is generally given in decoction. One ounce of the bark to a quart of water, boiled down one-third, may be taken in doses of a gill, repeated five or six times in twenty-four hours. The powdered bark may be given in doses of from twenty to thirty grains.

For an excellent figure and description of this shrub, the reader is referred to Bigelow's Medical Botany, Vol. iii.

SAPONARIA OFFICINALIS.

This plant is common to France, Germany and England, and is now naturalized and abundant in the United States. It has a long, creeping, articulated and knotty root, of a reddish-brown colour externally, and white within. The stem is erect, branched, jointed, and from five to eighteen inches high. The calices are cylindric, and the flowers white. It grows among rubbish along road-sides, and near neglected out-houses. It flowers in July. The whole plant has a bitterish and slightly acrid taste. The infusion of the leaves assumes a pale black colour on adding to it some sulphate of iron; the decoction of the root, however, undergoes no change by the addition of this salt. A saponaceous substance may be obtained from the decoction of the recent leaves, which appears to contain all the active properties of the plant. Alcohol extracts an acrid and penetrating substance.*

The soapwort has been highly recommended for its medicinal powers. Alibert, whose opinion merits great deference, observes that it is surprising that this plant is not more frequently employed; its energetic properties entitling it to a distinguished rank in the materia

* Alibert, Elémens de Thérap. vol. ii. p. 333.

medica. In rheumatic affections depending on a syphilitic taint, and in arthritic pains, it is stated to be an exceedingly useful remedy. "It often happens," says Alibert, "that venereal affections resist the powers of mercury; the symptoms increasing instead of diminishing under its influence. In such cases the saponaria produces excellent effects. I have very frequently administered this remedy in scaly tetters, (dartres furfuraceus,) and I have had occasion in a great variety of instances, to be satisfied that this valuable plant is too much neglected by practitioners."* I once saw a case of herpetic eruption entirely cured by the use of this article, after it had resisted almost every other treatment recommended in such cases. It is also said to be very serviceable in scrofulous and other ill-conditioned ulcers; particularly in venereal ulcerations of the throat and mouth.†

The saponaria is usually given in decoction; and the root is said to be much better for this purpose than the plant. The decoction may be made by boiling two ounces of the root in two quarts of water, down to one quart; the whole of which is to be taken in twenty-four hours.

SULPHUR.

I HAVE already given an account of the medicinal powers of this substance in the chapter on cathartics, and need, therefore, in this place do little more than to notice more particularly its tendency to act upon the cutaneous system. Sulphur has been long celebrated, both as an internal and an external remedy in the cure of chronic cutaneous diseases. It has also been highly recommended in rheumatic and gouty affections, and

* Alibert, Elémens de Thérap. vol. ii. p. 332.

† Burdach, Arznei. B. iii. p. 150.

in diseases of the lymphatic system.* Not to repeat, however, what I have said upon this subject in the first volume,† it will here be necessary only to add something concerning the effects of this remedy when applied externally in the form of fumes. Sulphurous fumigations have been highly extolled, within a few years past, in the treatment of a great variety of obstinate complaints. Dr. Gales, of Paris, was the first who introduced this method of applying sulphur. The apparatus which he used for this purpose consisted of a wooden case, having an aperture in the upper part. The fumes arising from ignited sulphur are applied to the naked body of the patient seated in this box, with his head out of the aperture at the top. Around the edge of this opening a leather bag is fixed, which being fastened round the neck, prevents the fumes of the sulphur from reaching the eyes, nose, or mouth.

The immediate effects experienced from fumigation, is a sense of prickling heat in the skin, which is soon followed by profuse perspiration. The diseases in which sulphurous fumigation has been found most beneficial, are chronic rheumatism, psora, lepra, and herpes. Dr. Gales relates many cases of this kind, in which the good effects of this treatment were surprisingly prompt. Dr. De Carro, of Vienna, who introduced the sulphurous fumigating baths into Germany, has also published the result of his experience with this remedy; and we are informed that, in the majority of the cases, "the benefit derived was very striking, and the shortness of the period necessary for the cure really astonishing." Alibert observes, that the *pustular* and *papular* itch are not equally benefitted by sulphurous fumigation. The former variety is almost always exasperated by the

* Alibert, Sœmmering, De Morbis vasorum absorbentium, &c.

† Page 182.

contact of sulphurous vapours, whilst a liquid application, composed of a certain proportion of sulphur of potass and sulphuric acid, readily cures it. This is also the case in long standing and cachectic cases, attended with brown crusts of different sizes scattered over the arms and thighs. Frictions with sulphur ointment alternated with simple baths, are generally sufficient to remove this variety of the disease; whilst fumigations often are followed by no evident advantage. The papular itch, however, may be treated with peculiar advantage by fumigation.*

It appears from the observations of MM. Alibert and Biett, that many persons are wholly incapable of supporting the influence of sulphurous fumigations. It sometimes produces alarming syncope, and a sense of suffocation. Alibert points out the following counter-indications to the employment of the sulphurous vapour bath. 1. A predisposition to apoplexy. 2. Asthma and chronic catarrhal affections in old people, and a predisposition to phthisis. 3. Organic affections of the heart. 4. Pregnancy.

That sulphur applied in the form of fumes will often act very beneficially in cutaneous affections, cannot be doubted. It would appear, however, from later experience, that its powers were at first considerably exaggerated, and that its good effects are pretty much confined to those cases in which sulphur applied in the form of ointment, or the application of diluted sulphuric acid, has been found serviceable. It possesses, however, the advantage of acting much more promptly, and of exciting profuse perspiration, which latter circumstances will sometimes enable it to afford relief in rheumatic and other affections connected with torpor of the perspiratory function.

* Alibert, Elémens de Thérap. vol. ii. p. 487.

CHAPTER XIII.

EPISPASTICS.

The term epispastic was anciently applied to all such articles as produce redness, inflammation, or vesication when placed in contact with the cuticular surface. At present, however, it is used in a more limited sense; being restricted to those substances alone which excite the exhalents to an abundant effusion of serum under the cuticle, producing vesication, or in common language, blisters. The modus operandi of vesicatories in the cure of diseases has been a subject of much controversy. Much of their beneficial operation was formerly ascribed to the evacuation they produce. That they do some good in this way, though not so much as has been supposed, I cannot doubt. I suspect, however, that more advantage is derived from the secondary or purulent discharge than from the serous, or that which is the immediate consequence of vesication. To be convinced of the effects of discharges of this kind, we need only advert to the manifest influence which the occurrence of abscesses, or the production of artificial eruptions occasionally produces on diseases. The suppression of a small discharge from behind the ears of children, is often followed by the most dangerous consequences, and its re-establishment is, as generally, manifestly beneficial. It is frequently observed, too, that the good effects of blisters do not occur until the secretion of pus commences. It is, after all, highly

probable that the discharge from a vesicated surface is in the majority of cases salutary, more by its secondary effects in keeping up a new determination to the part, than by its direct influence as an evacuation. When we advert to the nature of those diseases in which blisters are most beneficial, it appears evident, I think, that their salutary operation must depend mainly on diverting the circulation and excitement from the affected organs, and directing them upon the vesicated part. Thus blisters applied to the side in peripneumony, establish an increased determination to the surface, and by this effect produce a derivation from the inflamed vessels of the pleura and lungs, and enable them to recover their healthy state. A blistered surface may be considered in the light of a new excretory organ, the formation of which requires the establishment of a new current or determination of blood. So long as the discharge continues, so long will there be an especial demand of blood in the blistered part, and a consequent derivation of the circulation from the inflamed and engorged vessels of the neighbouring organs. It is by thus rendering a constant supply of blood necessary in blistered parts, and thereby sustaining the local determination to the surface, and not by evacuating any morbific matter, that the discharge from blisters, for the most part, appears to do good. It is nevertheless quite probable that blisters do sometimes act beneficially by their direct depletory effects. In erysipelas, for instance, we often derive immediate and decided benefit from blistering the affected part. To explain this, as is commonly done, by ascribing it to the establishment of a new action in the part, appears to me exceedingly vague and unsatisfactory. Is not the direct evacuation of serum from the inflamed vessels sufficient to explain the advantages obtained in

cases of this kind from blistering? In erysipelas the cutaneous capillaries are especially involved in inflammation. Why therefore should we not expect benefit from an application which is calculated in a direct way to lessen the contents of these engorged capillaries?

Blisters have also been supposed to do good by their stimulating and cordial effects. "That these remedies," says Dr. Chapman, "are cordial and exhilarating, is proved by their efficacy in all nervous affections, whether distinguished by a preponderance of mental or corporeal infirmity and weakness." It appears to be well ascertained, however, that in all cases of *real* debility vesicating applications can prove serviceable only when employed in such a way as simply to produce a rubefacient effect; blistering under such circumstances being almost invariably detrimental. In nervous affections, attended with weakness, blistering is without doubt often beneficial. But it must not be inferred, that the good effects of blisters in such cases are in any particular degree dependent on their "cordial or exhilarating" operation. For it is to be observed, that the weakness which attends nervous affections, is frequently immediately dependent on irregular determinations to some of the internal organs, and that in proportion as we obviate such determinations or congestions, and thereby relieve some oppressed vital organ, so do we remove the weakness to which they give rise. It is by an operation of this kind chiefly, I conceive, that vesication is found occasionally to produce invigorating consequences in nervous affections.

Cullen ascribes the beneficial operation of blisters to their supposed power of relieving spasm. That the skin frequently becomes moist and relaxed from vesication, is certain; but it is very questionable whether this can be properly ascribed to the direct antispasmodic

or relaxing powers of such applications. By relieving pain, irritation, and congestions of the internal organs, blisters may give a general healthy impulse to the various emunctories of the system, and enable the cutaneous capillaries to resume their regular action. The utility of blisters in some of the spasmodic affections, would seem to countenance the idea of their possessing direct antispasmodic powers. Their effects in this way, however, must be referred to the same operation that has been mentioned in relation to their employment in nervous affections.

In whatever manner we may account for the operation of blisters, experience has fully demonstrated their utility in a great variety of affections. In the treatment of febrile diseases they are capable of affording very important advantages. Physicians have, however, by no means been unanimous in recommending them in fevers. Dr. Fordyce rejected them as not only useless, but even pernicious. The authority of this eminent physician has, however, not been sufficient to countervail the testimony, which the experience of the majority of the profession has brought forward in favour of the beneficial effects of blistering in fevers. In the treatment of intermittents, blisters cannot be considered as an ordinary remedy. Under certain circumstances of the disease, however, they may occasionally be employed with great advantage. Cases occur which are attended with an irritated pulse and a dry skin during the intermission, and which are found to resist the most liberal use of bark, &c. In such cases the application of blisters to the wrists or ankles. or a large one laid between the shoulders, will generally produce such a change in the character of the disease, as to enable the bark fully to display its febrifuge powers.

In continued fevers, blisters judiciously managed

are undoubtedly often of great advantage. But it must be admitted, that unless they are well timed, as to the period of the disease, they are not only useless, but frequently manifestly injurious. As a general rule, blisters are inadmissible in the commencement of febrile affections. Where inflammation or dangerous congestion of some important internal organ is present, they are nevertheless sometimes of essential service, and may be resorted to in the very beginning of the disease concomitantly with venesection and other antiphlogistic measures. But in idiopathic fever, without any evident congestions or inflammation, they seldom fail to do harm when employed before the alimentary canal has been duly evacuated, and the action of the heart and arteries moderated by proper depletory measures. There is a period in the course of continued fevers intermediate between the stage of high excitement and the appearance of symptoms of collapse, in which blisters will generally produce unequivocal good effects. This is what has been called the blistering point, an expression familiar to those who are acquainted with the writings of Rush. Those who have contemplated fevers most attentively have noticed, that they often begin to decline immediately after the occurrence of some particular spontaneous evacuation, or on the appearance of abscesses, &c. It is also ascertained that such "critical movements" seldom, if ever, occur during the primary stage of febrile excitement. It appears, therefore, that there is a tendency in fevers, at a certain period of their course, to throw a more than usual burthen upon some of the emunctories, or to establish particular determinations, giving rise to hæmorrhage, abscesses, &c. as the first movement towards amendment. It is at this period in the course of febrile diseases, during which efforts of this kind are sometimes observed to occur,

that blisters appear to be particularly serviceable. It is only, however, when the indications of a change of action in the system are obscure or imperceptible that vesicatories are admissible; for during what is commonly denominated a critical discharge, they would be obviously improper. The utility of blisters in continued fever unattended by any particular local affection, appears to me therefore to depend on giving an impulse to the sanative powers of the living economy, and at the same time establishing a new secreting surface, towards which the humours are especially directed. In cases attended with symptoms of particular affection of any of the important internal viscera, we employ blisters upon a different principle. In instances of this kind our object is to relieve the oppressed organ, and we accordingly apply the blister as near the affected viscus as is practicable, in order more effectually to derive the blood from the engorged or inflamed vessels. Thus, in fevers attended with delirium, and other symptoms of inflammation and engorgement of the vessels of the brain, blisters are applied to the head, not so much with a view of arresting the progress of the general disease as of relieving and protecting this important organ. Percival observes, that in fevers attended with a general disposition to inflammation, without any one part suffering more than another, blisters always act injuriously. When, however, local inflammation of any of the internal organs is connected with the fever, vesication is almost universally useful. Experience, he says, demonstrates, that in such cases blistering the skin near the affected part lessens the flow of blood to it, and thus contributes to resolve the inflammation, and consequently the general febrile excitement.*

Blisters are very important remedies in the treat-

* Essays, Medical, Physiological, and Experimental.

ment of the different varieties of phlegmasial diseases. In acute pulmonic affections especially, they are often indispensable. Some difference of opinion exists among physicians as to the proper time for applying blisters in pneumonia. It is contended by some that they do more mischief than good when resorted to before the action of the heart and arteries has been considerably reduced; while others allege that they may be advantageously applied in the very commencement of the disease. That blisters may be very early resorted to in pneumonia with advantage, I am entirely persuaded from repeated experience. Without doubt, however, they will perhaps always act with more decided benefit when applied after the vehement arterial excitement has been somewhat moderated by depletory measures. But they may nevertheless, generally, be resorted to very early with advantage; and more especially, as several bleedings may be practised, between the time of their application and the commencement of vesication, and the general momentum of the circulation be thus diminished, before the stimulus of the epispastic has had time to disturb the system. In relation to this point, Dr. Armstrong makes the following observations: "It has sometimes struck me very forcibly," says he, "that the precipitate application of blisters to the chest, before general or local blood-letting, is a prejudicial practice; at least I have occasionally seen hydrothorax rapidly follow it, from the increase of the general and topical excitement which blisters thus applied had apparently produced. This point therefore is, perhaps, deserving of further investigation in the acute pulmonary inflammation."* In pleurisy and other acute pulmonic affections, the blister should be laid

* Practical Illustrations on the Scarlet Fever, p. 154.

immediately over the part which appears to be principally affected. Some very celebrated writers, however, recommend them to be applied on the thighs or legs. Baglivi observes, that cases of pleurisy sometimes occur in which great difficulty of respiration and suppression of expectoration come on about the fifth or sixth day, whether bleeding has or has not been practised. "Two blisters applied to the legs and thighs in such cases, will not only promote the expectoration, but remove the difficulty of breathing, and produce a favourable change."* This practice, as Alibert observes, is sanctioned by the following aphorism of Hippocrates: In pulmonis affectibus, quicunque tumores fiunt ad crura, boni; nec potest quidquam melius accidere si mutato sputo, sic appareant."

In the treatment of hepatitis, both chronic and acute, blisters are often highly serviceable; and in inflammation of the bowels and peritoneum they are indispensable. In all these affections the blisters should be large, and applied immediately over the affected parts. In acute hydrocephalus, also, blisters over the scalp, or what is better, on the back of the neck, can never be neglected with propriety. In all these affections, however, it is necessary to observe that bleeding forms the primary and most essential curative measure. In acute rheumatism, after the violence of the general excitement has been considerably reduced, blisters will commonly procure great relief when laid over the parts particularly affected. They are also useful in some varieties of the chronic form of this complaint, and particularly in sciatica. "In the worst chronic states of local rheumatism of the nerves," says Dr. Scudamore, "I have seen the cure obtained, or very material relief

* Alibert, Elém. de Thérap.

afforded, by the successive application of blisters."* In the cure of gout, blisters have been recommended by some writers and condemned by others. Rush and Musgrave speak favourably of their employment both in acute and chronic gout; whilst Cullen and Scudamore consider them as at least hazardous.

It is unnecessary, however, to mention particularly every variety of phlegmasial disease in which blisters may be employed with advantage. With the exception, perhaps, of nephritis, they may be considered as primary remedies in all internal inflammatory affections. In nephritis, however, they are inapplicable on account of the tendency which cantharides possess of irritating the urinary organs, and consequently of increasing the inflammation of the affected parts. We need only advert to the modus operandi of blisters in the cure of internal inflammatory affections, as explained in the beginning of this chapter, to see their general applicability in the various forms of these complaints. For it is obvious that every remediate measure which has a tendency to divert, in any degree, the circulation from the affected parts, and direct it upon external and less important ones, must be capable of procuring beneficial effects in this class of diseases.

In the treatment of dysentery, and especially of cholera, blisters may often be applied, both to the extremities and the abdomen, with great advantage. In the latter of these affections, blistering with cantharides is much too slow for the very rapid course of the disease. The nitric acid has, however, been recently employed for this purpose with the happiest effect, being exceedingly prompt and active as a vesicatory. In cholera infantum, blisters, or at least rubefacients,

* Treatise on Gout and Rheumatism, p. 316.

are of essential utility. Applied over the region of the stomach, they often allay the inordinate irritability of this organ in a very effectual manner.

In severe cases of dyspepsia, attended with inflammatory irritation of the mucous membrane of the stomach, blisters laid over the epigastric region, generally procure important relief.

Blisters have also been frequently resorted to in the exanthemata, and particularly in confluent small-pox, and in measles, when the eruption recedes suddenly, or symptoms of pulmonic inflammation and oppression supervene. But in subjects who have been much worn down by these diseases, and in whom the existence of obscure visceral inflammation may render epispastics necessary, blisters must be applied with great caution. For the blistered portions of the skin, in cases of this kind, is apt to become gangrenous, producing dangerous and obstinate ulcerations. "The skin is one of the principal seats of the measles. It is exceedingly stimulated during the eruptive fever, and suffers a correspondent loss of tone as that fever declines; and as this cutaneous debility is greatest in emaciated, or in broken up habits, so the surface in them is less able to resist inflammation, without ending in gangrene or in an ill-conditioned sore."*

In the treatment of erysipelas blisters have been recommended as very efficacious. They are to be applied immediately on the inflamed part, and suffered to lie until vesication is produced. To arrest the progress of grangrene, blisters are among our most valuable remedies. Cotunnius states, that he once saw the lower extremities of a patient labouring under putrid fever become gangrenous, and that the gangrene extended to every part of the legs except to those

* Practical Illustrations on the Scarlet Fever, Measles, &c., p. 172.

upon which the blisters had been laid. The mortification terminated about a finger's breadth from the margin of the blisters.* Blisters, observes Rœmer, appear, therefore, to possess the power to arrest the progress of mortification.† It is to Dr. Physick, however, that we owe our knowledge of the real value of this remedy in gangrene. The blister should be large enough to cover all the sound parts in contact with those which are in a state of gangrene. "I have witnessed the effects of blistering," says Dr. Dorsey, "in a variety of instances, and have no hesitation in recommending them in preference to all other local remedies. After the first dressing of the blister, it will generally be found that the mortification has ceased to progress, and in a short time the separation of the sloughs commence."‡

Blisters have also been employed with much benefit in some varieties of hæmorrhage. They are especially useful in epistaxis; an alarming case of which I once saw effectually arrested by a blister laid on the back of the neck. Dr. Robert Archer, of Norfolk, has related a remarkable instance of the utility of blisters in a case of this kind. The patient was nearly exhausted; every means that could be suggested had been tried in vain. On the fifth day a blister was applied to the back of the neck. This application "produced an astonishing effect, for it no sooner began to vesicate than the hæmorrhagy ceased, as if by a charm." The patient recovered rapidly; but as soon as the blister healed the bleeding returned. The blister was renewed and kept open for some time; the hæmorrhage immediately ceased, and the patient recovered his

* De Sedibus Variolarum.

† Rœmer's Chirurgische Arzneimittellehre, tom. i. p. 218.

‡ Elements of Surgery.

health.* In hydropic affections, blisters are sometimes highly beneficial. They are particularly useful in ascites and hydrothorax, unattended with much anasarcous effusion. They tend, very considerably, to derive the blood from the irritated or congested serous membranes, from which the effusion occurs, and consequently to lessen the effusion and promote its absorption. In anasarca, blisters cannot be applied without more or less risk of gangrene or mortification.

In the treatment of spasmodic affections, blisters have been observed to display very considerable powers. Several cases are related of their successful application in tetanus. Dr. William Carter, of Canterbury, gives an account of a case of this disease from a wound, in which he applied a blister between the shoulders the whole length of the spine, and directed an active purge every two or three days, giving, on the intermediate days, oil of amber and assafœtida. By these means the patient recovered his health in less than three weeks.† In the cure of epilepsy, blisters have been more frequently employed than perhaps, in any other of the spasmodic diseases. Mead,‡ Baumes, and Percival mention cases of the successful application of blisters in this disease. Richter observes, that vesicatories are most applicable in such cases as are attended with an irritated condition of the brain during the intervals, and connected with a dull and soporose disposition and a small and trembling pulse.§ Blisters are said to act most beneficially in this disease when laid on the calves of the legs. Rivereius‖ and Piso

* American Medical Recorder, vol. i. p. 16.

† Medical Transactions of the Lond. College of Physicians, vol. ii. p. 34.—1772.

‡ De imperio Solis et Lunæ, etc. cap. ii. p. 8.

§ Richter's Specielle Therapie, vol. vii. p. 710.

‖ Opera, lib. i. sect. 2, cap. 6.

cured inveterate cases of epilepsy by applying them to the scalp and keeping them open for a considerable time. That cases of epilepsy have been cured by this remedy, we are not permitted to doubt. It does not appear, however, from the aggregate experience of the profession on this head, that they are entitled to any particular confidence in this intractable complaint.

In a great variety of local complaints vesicatories are of essential service. In inflammations of the joints, both acute and chronic, they are highly useful. They should be laid immediately over the affected joints, and kept discharging for a long time. This remedy, together with rest and a general antiphlogistic regimen, will frequently produce the happiest effect.

The application of a blister to the tract of an inflamed vein is a practice of much value. This treatment was first introduced by Dr. Physick. "A small plaster of simple cerate, spread on linen, is to be applied to the orifice, and over this a blister laid, large enough to cover the whole inflamed part, extending three or four inches from the orifice in every direction."*

In incontinence of urine, depending on paralysis of the sphincter of the bladder, blisters laid on the sacrum have been employed with much advantage.† Oliphant relates two instances of this kind, one of which was in a man of seventy-two years of age, in which the application of a blister over the os sacrum gave perfect relief.‡

Blisters have also been found very serviceable in some of the chronic cutaneous diseases. Bloch§ and Richter‖ employed them with great success in herpetic

* Dorsey's Surgery.
† Lond. Med. Observat. vol. i. p. 318.
‡ Gesner's Endeckungen, B. iii. p. 725.
§ Schmucker's Chirurg. Schriften, vol. ii. p. 96.
‖ Richter's Medical Library, vol. iii. p. 289.

eruptions, and Ambrose Pare relates a remarkable case of an eruption in the face cured by this remedy. The patient was a lady of distinction; her face was covered with innumerable little ulcers, and considerably swollen. The physicians considered it as a case of elephantiasis. After employing a vast variety of remedies without the least advantage, they applied blisters over the affected parts. These had hardly lain an hour before she experienced violent pain in the bladder, which was soon followed by tormina, vomiting, and fever. The blister drew well, and the disease disappeared, and never afterwards returned.* For obviating, or removing the injurious consequences which sometimes result from the sudden retrocession of cutaneous eruptions, blisters are among our most efficient means.

LYTTA VESICATORIA.—CANTHARIDES.

The cantharides are a beautiful and well known insect of the beetle tribe, being exceedingly abundant in the southern parts of Europe, and particularly in Spain. They delight to dwell on the leaves and flowers of the ash, the black poplar, the elder, and lilac, from which they are collected in June and July, and afterwards destroyed with the fumes of strong vinegar, and dried in the sun.†

These insects have a peculiar sweetish and nauseous odour. When first taken in the mouth they have very little taste, but on being chewed they become considerably burning and acrid. Hippocrates directs the heads, wings, and feet to be thrown away, as being, according to his notion, particularly poisonous. Galen, Pliny, and

* Opera, lib. xx. cap. 27.

† This mode of destroying cantharides is of very ancient date. Dioscorides recommends it particularly.

Ettmuller, on the contrary, thought that the bodies were the most poisonous; and that the heads, wings, and feet possess the power of counteracting the poisonous effects of the bodies. Cantharides have frequently been the subject of chemical analysis. According to Mr. Robiquet, they contain, 1. A blistering principle, to which Dr. Thomson has given the name of *cantharadin*. 2. A green concrete oil. 3. A yellow fluid oil. 4. A peculiar black substance, soluble in water and proof spirits, but not in pure alcohol. 5. A saponaceous or yellow substance, soluble both in water and alcohol. 6. Uric acid. 7. Acetic acid. 8. Phosphate of magnesia. 9. A parenchymatous substance.* The blistering principle, or cantharadin, when obtained in a separate state, consists of small plates of a micaceous lustre. It is insoluble in cold alcohol and in water. Boiling alcohol, however, dissolves it, but precipitates it again on becoming cool. Æther and the oils dissolve it readily. Although not soluble in water, it is rendered so by the presence of the yellow or saponaceous substance with which it naturally exists in a state of combination. The blistering property is very highly concentrated in the cantharadin. An atom of it dissolved in sweet oil, and applied to the skin with a bit of paper, produces vesication in five or six hours.† Neither the black substance nor the green oil possesses vesicating powers.

Cantharides have a peculiar tendency, whether taken

* Annal de Chémie, tom. lxxvi.

† The cantharadin may be obtained by the following process: Boil the cantharides in water repeatedly, until all the soluble parts are extracted; filter the decoction, and evaporate it to the consistence of an extract. Digest this extract in concentrated alcohol, then pour off the alcohol, and evaporate it; sulphuric æther, added to this alcoholic extract, will take up the cantharadin, which may be obtained in a pretty pure state, by evaporation.—*Pfaff's Mat. Med.* vol. iii. p. 243.

internally, or applied as a vesicatory to the skin, to act upon the urinary organs, and especially to produce irritation and inflammation of the neck of the bladder, and consequently strangury. It has been much disputed, whether strangury be produced by the absorption of the acrid portion of the cantharides, or whether it be merely the result of a sympathetic impression conveyed to the bladder. That strangury proceeds from the absorption of the acrid principle of the cantharides, is exceedingly probable from the fact that no other vesicating substance produces this effect. It is moreover very unlikely that the bladder should possess so extensive a sympathy with the surface of the body, as it must do if strangury from blistering be the result of a sympathetic impression; for, on whatever part of the body blisters be laid, strangury may be the result. Dr. Chapman observes, that "if strangury do thus arise, it ought invariably to take place on the application of a blister," which, however, is an incident of rare occurrence. But wherefore should strangury more frequently follow blistering, if it be occasioned by absorption of the cantharides, than if it depend on a sympathy between the skin and bladder? We might with just as much, and perhaps more plausibility, say, that if strangury arise from a sympathetic connexion between the external surface and the bladder, it ought more constantly to follow blistering. We know that turpentine occasionally produces strangury when taken internally, and that it is absorbed, and conveyed out of the system by the urinary organs. But are we to deny the absorption of this substance because it does not *always* produce strangury? The fact of its absorption is unquestionable. Dr. Chapman also states, "it is known that the internal use of cantharides is seldom attended by any effect, and when it does occur, it is more frequently

from small than large doses of this article." Against the correctness of this statement I may with confidence appeal to the general experience of the profession. By *large* doses of this article strangury may be generally induced, whereas small doses seldom produce any sensible effect whatever. Nor is it a fact that the internal use of cantharides is *seldom* attended by this affection of the bladder. In a highly interesting paper, published by Dr. J. Klapp, on the emmenagogue powers of cantharides, nineteen cases are detailed in which this remedy was administered internally, and in eight of which symptoms of strangury supervened.*

Blisters are particularly apt to excite strangury when applied to the head immediately after the scalp has been shaved; and more especially if the skin be wounded. This may be attributed to the greater facility which the absorbents possess of taking up the active principle of the fly, when the cuticle has been abraded and wounded by shaving; and hence, when cantharides are applied from twelve to twenty-four hours after the head is shaved, this effect hardly ever ensues.† To obviate, or relieve strangury, much benefit may be derived from the free use of mucilaginous and mild diuretic drinks, as barley-water, infusions of flaxseed, parsley, melon-seed, and particularly of marshmallows, or of our common round leaved mallows, (malva rotundifolia.) In addition to these, opium, taken into the stomach or administered in the form of a clyster, is always of essential service. Much benefit is also to be derived from warm bathing, or from fomentations to the perineum and pubis. Formerly camphor was a good deal recommended as a remedy for strangury; and it does not appear to me

* American Medical Recorder, vol. ii. p. 37.

† Percival's Medical Essays, vol. i.

to be wholly inefficacious in this respect. When speaking of this article under the head of narcotics, I adverted to its evident tendency to diminish venereal sensibility, or perhaps more properly speaking, to lessen the activity of the genital organs. This effect of camphor would seem to depend on an operation directly the reverse of that of cantharides,—namely, a diminution of the flow of blood to those parts. But as the operation of camphor in this respect is slow, it can seldom be employed with any particular advantage in cases of this kind, which require much more prompt means of relief. After the violence of the symptoms is over, and some pain or irritation remains at the neck of the bladder, it will nevertheless often prove useful, as I have in several instances witnessed.

Cantharides seldom produce complete vesication under ten or twelve hours. Before applying a blister, the skin upon which it is to be laid, or the surface of the plaster should be moistened with vinegar or brandy. When the blister is drawn it must be opened and dressed with simple cerate spread on linen. To keep up the discharge from a blistered surface, an ointment made of a small portion of cantharides and lard, is one of the best applications. Savin ointment is also very good for this purpose. When a blister is in a state of painful irritation, sweet oil, lard, or a soft bread and milk poultice should be applied.

Complete vesication may be produced by removing the cantharides as soon as the skin is slightly reddened or inflamed, and applying an emollient poultice over the part. This is a good mode of blistering in infants, or where we wish to avoid much pain and irritation. We may, also, vesicate in this way, in anasarca, or œdema with little or no risk of producing gangrene or sloughing.

LYTTA VITTATA.—POTATO FLY.

This insect is said to belong exclusively to the United States. It feeds chiefly on the potato plant, upon which it is often found in immense numbers about the end of July or beginning of August. It resembles in outward form the cantharides; being, however, somewhat smaller, and of a different colour. Its head is red, with black antennæ; the wing-cases are black, with a pale yellow margin, and a stripe of the same colour along the middle of them; the tarsi have five joints. "The abdomen of this insect is a hard, white substance, about the size of a grain of wheat, which, when powdered, appears like meal, and when rubbed with water forms a milky emulsion." Dr. Isaac Chapman, of Bucks county, in this state, was the first who publicly noticed the vesicating properties of this species of Lytta.* According to his experience it is equal if not superior in this respect, to the cantharides; and this has been confirmed by the experience of other practitioners. The late professor Barton gave a decided preference to the American fly. "Long-keeping," he observes, "provided it be carefully kept, does not materially impair the blistering property of the lytta vittata. At the end of three or four years after being collected, I have found it equal in power to the best shop cantharides." Dr. Gorham, of Boston, states, that in an extensive series of experiments with this fly, he found it equal if not superior in every respect to the cantharides. Administered internally, it produces the same effects upon the urinary organs, and is applicable to the same medicinal purposes as the Spanish fly.

* Medical Repository, vol. ii.

There are other native species of this genus of flies which possess valuable vesicating properties. The lytta atrata is a very common insect in this country. In the autumn it is found in great abundance on some of the syngenesious plants, such as aster, soledogo, &c. "Though inferior," says Dr. Barton, "to the lytta vittata, it is well worthy of the attention of physicians." The lytta marginata is not so common, but is an exceedingly powerful vesicatory. The lytta cinerea is said to be no less powerful than the latter species; it is, however, very scarce.

I may also, in this place, mention the meleo niger, which was first noticed as a vesicatory by the late professor Woodhouse. According to his experiments with this fly, it seems to possess very active vesicating properties. It is about half the size of the potato fly, and dwells particularly on the ambrosia trifida.

NITRIC ACID.

The nitric acid has been recently introduced into practice as a very valuable vesicating application in certain rapid and dangerous affections. Dr. Kennedy has published an interesting paper on this subject in the Edinburgh Medical and Surgical Journal. It has been found particularly efficacious in the cholera of India, a disease so rapid in its progress and fatal in its consequences, that nothing but extensive blistering of the epigastric region appears to be capable of arresting its course. Blistering with nitrous acid, being exceedingly prompt, and attended with much local irritation, is, according to the experience of Mr. Powell, surgeon at Bombay, a remedy of great powers in this affection. "The good effects," says Dr. Kennedy, "of this sudden and powerful counter-irritation, were strikingly illus-

trated in the case of an European, who received immediate relief in the burning sensation at the stomach on the acid blister being applied; and who, the next morning, being annoyed with spasms of the extremities, requested the same remedies might be applied; it was accordingly done, and so great was the relief obtained to one leg, that he cried out for God's sake to apply it to the other, which was similarly affected." Another patient, he observes, was brought in, and supposed to be past recovery. His stools passed off involuntarily; the extremities were cold, and the pulse could not be felt. "The acid blister was applied to the stomach, and the patient got well." Two parts of the acid is to be diluted with one part of water; with this mixture the surface over the affected part is to be rubbed. As soon as the patient experiences pain from it, the acid is to be neutralized by washing the surface with a solution of carbonate of potash. "The cuticle can now be easily detached, and leaves the cutis very raw, upon which a common blister may be laid to keep up the irritation."*

TARTARIZED ANTIMONY.

Although not a vesicating substance, tartar emetic deserves to be particularly mentioned in this place, as possessing the power of exciting a peculiar pustular eruption, frequently followed by highly salutary consequences. The best mode of using it for this purpose is to incorporate it with simple cerate or lard, in the proportion of a drachm of the former to about an ounce of the latter, and to apply it either by frictions or spread

* Observations on the Use of Nitrous Acid as a Substitute for Blisters, by Dr. Kennedy, F. R. S. E., in the Edinburgh Medical and Surgical Journal, for Oct. 1820.

on leather and worn in the way of a plaster, on the skin. Dr. Jenner, who has recently published a most valuable essay on the influence of artificial eruptions on certain diseases,* recommends the tartar emetic ointment to be made according to the following formula.† The effects which arise from inunction with this ointment are, a sense of itching or prickling in the part rubbed, commonly appearing on the second or third day after the frictions have been commenced. "If the part so affected be rubbed, or in any degree irritated, (from which few can refrain at first) an eruption of small watery pustules takes place immediately." If the patient abstain from irritating the part, the eruption will appear somewhat later. "The pustules," says Dr. Bradley, "are uniformly compared by patients to variolous pustules; but they are much smaller, not so red at the base, nor so tense and white when fully suppurated." I have, however, seen them much larger than the variolous pustules, and they are generally very painful.

In the essay already quoted, Dr. Jenner adduces a number of cases in which this ointment was applied with the happiest effects. He employed it with success in mania, phthisis, asthma, chronic hepatitis, chorea, epilepsy, and various other anomalous cases. This application has also been highly recommended as a remedy in hooping-cough. "Of all the remedies," says Dr. Robinson, "I have found beneficial in hooping-cough, frictions upon the region of the stomach with the tartarized antimonial ointment have been the most remarkably and most undeviatingly useful. The erup-

* American Medical Recorder, vol. v. p. 684.

† Antim. tart. (subtil. pulv.) ʒii.; ung. cetacei, ʒix.; sacch. albi. ʒi.;* hydr. sulph. rub. gr. v.—M. fiat ungueut.

* The sugar prevents the ointment from becoming rancid.

tion on the stomach is frequently accompanied with a slight degree of inflammation about the remote parts in females, with a spare eruption of minute pimples; and, on this occurring, the disease uniformly begins to abate. In cases where the patient is of a full habit and the inflammatory diathesis runs high, it may be proper to apply a few leeches to the feet previously to the use of the antimonial ointment. But I have used it with advantage, even in cases where the fever was attended with delirium at night. I have never seen the eruption produced in this way threaten the bad consequences from gangrene which not unfrequently supervene when the blisters are applied too early in hooping-cough, when the inflammatory diathesis runs high, and before blood has been abstracted. The effects of the ointment in other respects are also widely different. When it does produce an eruption, it almost always affords relief; whereas I have never seen an instance where the application of a blister has been of the smallest service in hooping-cough, except after blood-letting, when there have been manifest symptoms of inflammation."* This accords with the experience of Dr. Jenner: "With tartarized antimony," observes this distinguished physician, "we can not only create vesicles, but we can do more,—we have at our command an application which will at the same time both vesicate and produce diseased action on the skin itself, by deeply deranging its structure beneath the surface. This is probably one cause why the sympathetic affection excited by the use of cantharides and those changes produced by tartar emetic are very different."

The eruption should be kept up for some time, either by the re-application of small portions of the diluted tartar emetic ointment to the affected part, or by other

* London Medical Repository, January, 1821.

gently stimulating ointments. If they become much irritated and very painful, a soft bread and milk poultice, or an ointment made with equal parts of sweet oil and wax, will in general afford relief, without interfering with the eruption.

"The activity of tartar emetic ointment is to a considerable extent proportional to the fineness of the powder of the tartar emetic; and as it is frequently carelessly prepared with the tartar emetic as found in the shops, we need not be surprised, that in many instances it disappoints the expectations of the practitioner. The reduction of the salt to a proper degree of minuteness requiring some time and labour, M. Mialhe recommends, that a saturated solution of it in cold water be made, and that it then be precipitated with alcohol. The precipitate is to be collected on a filter and dried. Two drachms of this powder mixed with an ounce of simple cerate, will make a very active ointment. A very small quantity of alcohol will suffice to precipitate the tartar emetic in the form of an impalpable powder."

SETONS AND ISSUES.

The effects of setons and issues are very analogous to those of the articles already mentioned in this chapter. Being, however, very permanent in their operation, they are often peculiarly applicable in certain chronic affections where it is necessary to keep up a long continued counter irritating influence. Among the Greek and Roman physicians, caustic issues were frequently resorted to. Hippocrates employed them in gout, sciatica, chronic diseases of the liver, spleen, and lungs; and Ætius mentions their use in palsy and asthma. Celsus, also, employed them in

affections of the joints, in epilepsy and in phthisis. Boerhaave and De Haen, in modern times, recommended them in the treatment of the scrofulous disease of the hip joint; and Mr. Pott speaks highly of their efficacy in diseased or incurvated spine. A caustic issue on each side of the diseased vertebræ has been frequently known to give perfect relief in such affections. Dr. Rogers, Professor of Natural Philosophy and Chemistry at Williamsburg, Virginia, has recently published some highly interesting observations on the employment of caustic issues. He relates several cases of phthisis pulmonalis, which yielded entirely to their influence. In a case of this kind, which, from the strong hectic symptoms, the constrained state of the respiration, and the appearance of the matter expectorated, was considered altogether hopeless, a caustic issue formed on the sternum inter mammas, performed a perfect cure in the space of about three months. "In chronic affections of the breast," says Dr. Rogers, "this remedy is less troublesome, less painful, gives more permanent caustic irritation, and appears to me much more efficacious than blistering, however managed. So strongly am I impressed with this sentiment, that for several years I have trusted no case of the kind to any course of remedies without the aid of that under consideration. In chronic catarrh I have found it of singular utility."* Dr. Rogers has employed them with perfect success to prevent abortion in habits prone to this accident, as well as in the treatment of leucorrhœa and menorrhagia. Issues have likewise been applied with much advantage in vertigo, gutta serena, chorea, and tetanus. Dr. Hartshorne, of this city, has employed them with success

* American Medical Recorder, vol. iv. p. 222.

along the spine, in this latter affection;* and Dr. Lewis, of Pittsburg, has related a case of this disease which yielded to the application of caustic potass along the tract of the spine.†

When setons or issues are employed for the removal of local affections, they should be applied as near the affected part as practicable. In general diseases, however, they may be inserted on some convenient part of the extremities, as on the inside of the leg, just below the knee; or on the arm, near the insertion of the deltoid muscle.

The usual mode of forming a caustic issue is as follows:—Take a piece of adhesive plaster, of from three to four inches in diameter; out of the centre cut an oblong or circular piece of the size of the intended issue: the plaster is then to be laid over the part on which the issue is to be formed. Caustic potass, moistened with water, is now gently rubbed over the skin, presented through the opening in the plaster, until the skin acquires a dark brown colour. The caustic must remain on the part about four or five minutes. It is then to be wiped off, and a soft emollient poultice applied, and renewed two or three times daily, until the eschar is thrown off.

RUBEFACIENTS.

The articles which belong to this class do not vesicate, but simply produce a redness and inflammation of the part to which they are applied. Their modus

* Eclectic Repertory, vol. vii. p. 245.
† American Medical Recorder, vol. iii. p. 176.

operandi in the cure of diseases, depends probably on the same principles that have been mentioned above in relation to the operation of epispastics. They concentrate the excitement, and produce a determination of the circulation to the part upon which they immediately act. Without, however, entering into any discussion upon this point, I pass on directly to the consideration of the individual articles of this class.

SEMINA SINAPIS.

Mustard is one of the most useful rubefacients we possess. Its action on the skin is prompt and powerful, producing, when good, pain and inflámmation in fifteen or twenty minutes. It contains fecula, mucilage, a bland fixed oil, " and an acrid volatile oil upon which its virtues depend, and which on standing deposits a quantity of sulphur and ammoniacal salt." Water extracts nothing but tasteless mucilage from the unbruised seeds; when bruised they impart all their active principles to water; but very sparingly to alcohol. The mode of using this article, as a rubefacient, is to make a paste with the farina of the seeds and water or vinegar, and to apply it in the shape of a poultice to the skin. The pain which such an application produces is generally exceedingly severe, and if suffered to remain on too long it is apt to occasion troublesome sores. From a series of experiments made on *sinapisms* by MM. Trousseau and Blanc, it appears—1. That black mustard, *fresh* ground, is not more active than that which has been ground for five or six months, and kept wrapped up in paper in a damp place. 2. Sinapisms prepared with *warm* water, act rather more promptly than those prepared with cold water; " but after a few minutes the difference

ceases to be discoverable." 3. "Mustard mixed with warm water acts with much greater energy than when mixed with ordinary vinegar, or with acetic acid much diluted; and even with concentrated acetic acid it acts less energetically than with water alone, although acetic acid in this state, if applied to the skin by means of a sponge, or mixed with some inert powder, as sawdust, is a much more powerful irritant than mustard itself, producing much inflammation of the skin in the course of three or four minutes; so that vinegar mitigates the action of sinapisms, and mustard in its turn, diminishes the irritating property of acetic acid. Good mustard mixed with water, produces at the end of six minutes, as much pain as the same mustard made into a cataplasm with vinegar, does at the end of fifty minutes. Instead, therefore, of expecting greater energy from a mustard plaster made with vinegar, we may now direct this addition as a diluent, with the same view that we order rye meal to be added to the sinapism." *White* mustard was found to act in the same way precisely, whether mixed with water or vinegar. 4. Sinapisms prepared with alcohol are less active than those prepared with vinegar. 5. When sinapisms are made with good mustard, they can seldom be supported longer than about forty minutes, unless sensibility is blunted by opium or cerebral oppression; "and even then, the cataplasm should not be allowed to remain more than an hour in contact with the skin; for though it may be borne many hours, yet if the system re-act, very severe local inflammation follows, which frequently ends in gangrene, and may even destroy the patient." (Archives Generales, Sept. 1830.) *Sinapisms* are often of great service in the treatment of diseases. In apoplexy and comatose affections they are applied to the feet, in order to pro-

duce a revulsion from the engorged vessels of the brain. They are, also, very beneficial when applied to the abdomen in spasmodic affections of the stomach and bowels: as well as in all painful affections unattended by high arterial excitement. In the low states of fever, they will sometimes manifest very useful effects, by their general stimulant operation, and their tendency, when applied to the lower extremities, of lessening the cerebral congestion, which always exists more or less in the latter periods of typhous fevers. Mustard seed is also used internally as a medicine. The unbruised seeds are particularly recommended in paralysis, dyspepsia, chlorosis, and chronic rheumatism. Powdered mustard mixed with warm water, in the proportion of a table-spoonful of the former to a pint of the latter, acts promptly as an emetic. Administered in this way, it has been much employed as an emetic in epidemic cholera, and according to some statements, occasionally with signal benefit. The *white* mustard seed is an excellent remedy for indigestion depending on mere torpor or weakness of the digestive organs. A table-spoonful of the seed swallowed once or twice daily, seldom fails to afford very considerable relief in cases free from inflammatory irritation of the stomach. This remedy is particularly adapted to cases of this kind, attended with habitual costiveness.

CAPSICUM ANNUUM.—CAYENNE PEPPER.

This is an excellent rubefacient. It may be employed for this purpose, either by mixing the powdered capsules in proof spirits, or in the shape of a saturated tincture. In paralysis or torpor of the extremities, and in the low states of fever, friction with either

of these preparations is sometimes very serviceable. Wearing socks dusted with red pepper, is said to be very useful in diseases of the bowels attended with cold feet. The cataplasms of capsicum have also been recommended as good applications to the feet, in the delirium and coma of typhous fevers. The diluted juice of the pods has been employed with excellent effects in chronic ophthalmia.

ALIUM SATIVUM.

Garlic is frequently employed to produce rubefacient effects. It is, however, apt to vesicate, and where mere inflammation or redness of the skin is desired, it is not so well suited as the two preceding articles. Sydenham speaks highly of the application of garlic to the soles of the feet, as a powerful means of producing revulsion from the head. The late professor Barton thought it an excellent application in deafness from atony or rheumatism. For this purpose he recommended a clove of the garlic to be surrounded with cotton and introduced into the ear; or wool or cotton moistened with the juice and applied in this way. It has also been employed with success, in the form of an ointment to discuss indolent tumours.*

OLEUM TEREBINTHINÆ.

Turpentine is strongly rubefacient, and is one of our most common applications for purposes of this kind. There are some peculiar habits, however, in which it cannot be used on account of its occasioning violent smarting and erysipelatous inflammation. It is

* Thacher's Dispensatory.

usually employed in the shape of a liniment, in union with alcohol and other rubefacient articles. When applied to the skin in an undiluted state, it excites considerable pain, with redness, and generally a vesicular eruption. It is an excellent application to the throat in cynanche trachealis; and may, indeed, be applied with advantage in all instances where remedies of this kind are indicated. Of the use of this article in burns and scalds, I have already spoken under the head of stimulants.

Formulæ.

℞.—Ol. olivar. ℥x.
Ol. terebinth. ℥iv.
Sulph. acid. ʒii.—Misce. An excellent rubefacient.

℞.—Acid. nitro-muriati. ℥iss.
Ol. terebinth. ℥i.
Axungiæ ℥vi.—M. Highly recommended as a counter-irritating application in phthisis and other internal affections.—*Sapo terebinthinatus, Pharm. Bav.*

℞.—Sapo. hispan.
Ol. terebinth. āā ℔ss.
Carb. potass ℥i.—Misce. An excellent rubefacient in cold and indurated swellings.

OLEUM MONARDÆ PUNCTATÆ.

The oil of the monarda punctata, a beautiful native plant of this country, is a most powerful rubefacient. Its powers in this respect were first noticed by Dr. E. A. Atlee, of this city, in an interesting paper published in the second volume of the American Medical Recorder. It is exceedingly active, producing heat, redness, pain, and vesication in a very short time, when applied to the skin. Dr. Atlee states, that he has used it with much advantage as a rubefacient liniment, in chronic rheumatism, difficulty of hearing, periodical headache, paralytic affections, cholera infantum, and typhus. "During the prevalence of the epidemic ty-

phus in our city a few years ago," says he, "I was much pleased with its effects in the remarkable sinking state, and coldness of the extremities, to which the patients were subject. The arms, breast, and legs were bathed with this liniment,* omitting the laudanum, and in a few minutes a comfortable glow succeeded." In the treatment of cholera infantum, I have myself employed it with great and prompt advantage. By bathing the abdomen and extremities with the oil properly diluted, it speedily produces redness of the skin, and very generally relieves the gastric irritability.

From my own experience with this oil I am satisfied that it is one of the most active rubefacients we possess, and that it will be found to answer exceedingly well in all cases where such remedies are indicated.

AQUA AMMONIÆ.

This article is very frequently employed as a rubefacient. In union with sweet oil it forms an excellent application in a variety of affections. Pringle thought it particularly useful in cynanche tonsillaris, and it is still much used as a liniment to the throat in this and other similar affections. Its rubefacient powers are, however, not very great, its application being seldom followed by much redness, unless in young subjects.

CAMPHORA.

Camphor dissolved in alcohol is one of our most common rubefacients. The celebrated Steer's opodeldoc consists of soap ℥vii. alcohol ℥ii. camphor ℥ii. liquor

* ℞.—Ol. monard. punct. ℥ss.
Tinct. camph. ℥ii.
Tinct. opii. ʒii.—M.

ammon. ʒiv. and oil of rosemary ʒss. This mixture is a very useful stimulating liniment in rheumatic affections. Dr. Ferriar recommends the following ointment as an efficacious application in lumbago. He speaks very highly also of frictions with camphor dissolved in vitriolic æther. According to Scudamore, one of the best embrocations in subacute rheumatism, and gout, is a mixture composed of three parts of the *mistura camphoata*, and one part of alcohol. After the violence of the inflammation has been considerably reduced, by proper antiphlogistic measures, important relief may often be derived from the application of this mixture. Strips of flannel should be moistened with it, and laid over the inflamed joint.

℞.—P. Camph. ℈ii.; ung. basilic. ℥i.; sapo. ℥ss.; pulv. sem. sinap. ℈i.; M. ft. unguent.

TINCTURA CANTHARIDUM.

The tincture of cantharides possesses but feeble rubefacient powers; it does not, like most of the other articles that have been mentioned under this head, produce much burning heat in the part to which it is applied, and it is seldom even that it can be made to produce much redness of the skin. It has nevertheless been recommended as peculiarly serviceable in chronic rheumatism and paralytic affections. A decoction of cantharides in the oil of turpentine, however, forms one of the most active rubefacient agents we possess. This decoction is frequently employed for the purpose of hastening the vesicating effects of epispastics. If previous to the application of the epispastic the part be rubbed with this liquid, vesication will take place in a few hours.

PIX BURGUNDICA.

This resinous substance is obtained from the Norway spruce fir, (pinus abies,) by making incisions through its bark. Spread on leather, it is much employed as a rubefacient application, and its effects are, indeed, often highly useful. When applied to the skin, it generally begins to produce a prickling heat in the course of about twenty-four hours, followed commonly by numerous small red pimples exuding a serous fluid, and occasionally also by vesication. In lumbago a plaster of this substance worn over the loins often proves very serviceable. Applied between the shoulders or to the breast, it is also frequently attended with very good effects in diseases of the lungs, particularly in chronic catarrh, hooping-cough, and spitting of blood. In chronic diarrhœa and dysentery I have known very excellent effects to arise from a large Burgundy pitch plaster worn on the abdomen. Enveloped in cotton and introduced into the ear, it has been found serviceable in difficulty of hearing depending on a rheumatic affection or atony of the ear.

ERRHINES.

These are medicines, which, when applied to the Schneiderian membrane, increase its natural secretions. In persons not habituated to their use, they generally produce sneezing, and hence they are also called sternutatories. The practical application of these remedies is but very confined. Their use is restricted exclusively to the cure of some affections of the head. Their modus operandi is not difficult to understand. By irritating the Schneiderian membrane, they occasion

an afflux to this organ, and an increase of its secretions, and consequently a derivation of the circulation from the surrounding or neighbouring parts. Hence, they have been found serviceable in rheumatic affections of the head, in pains of the ear, in ophthalmia, toothache, and various other affections of these parts. I proceed to mention a few of the principal articles employed as errhines.

NICOTIANA TABACUM.

Tobacco, in the form of snuff, is extensively used as a luxury. In persons not habituated to its use, in this way, it acts as a pretty powerful errhine. By repetition, however, it soon loses its power of increasing the discharge from the nose; and, on this account, it can seldom be employed with particular advantage in cases that require a pretty long use of such a remedy. It has been said, that when snuffing produces a considerable discharge from the nose, which is sometimes the case even in such as take it habitually, it cannot be laid aside without the risk of injurious consequences. "From my own experience," says Dr. Cullen, "I am led to repeat here, that whenever the discharge has been considerable, the laying aside snuffing, and therefore suspending that discharge, may have very bad effects." All artificial discharges become constitutional by long continuance, and can seldom be checked suddenly without producing injurious effects.

ASARUM EUROPÆUM.

The asarabacca, besides its emetic and purgative properties, is powerfully errhine. When snuffed into the nose it produces violent sneezing and a copious

discharge of mucus from the nostrils, and frequently also a plentiful secretion of saliva, continuing sometimes for several days. It must be employed in moderate doses, as its effects are often exceedingly violent when snuffed in large portions. A few grains of it snuffed once or twice a day have been known to produce excellent effects in toothach, ophthalmia, headache, and other affections of the head.

HELENIUM AUTUMNALE.

This is a syngenesious plant, indigenous to the United States, in many parts of which it grows in great abundance. The whole plant is intensely bitter, and may be usefully employed as a tonic. As an errhine, the powdered leaves are recommended by the late professor Barton as safe and valuable. I have prescribed it in a few cases, and found it to produce profuse discharges of mucus from the nose. It is less violent in its effects as a sternutatory than the asarum, and produces quite as much discharge.

TURBETHUM MINERALE.

This is a very valuable errhine. It seldon fails, when snuffed up the nose, to produce very copious fluid discharges. When employed for this purpose, it is generally mixed with the powder of asarum, or with common snuff. In affections of the eyes and ears, this errhine has been found to produce valuable effects. Dr. Barton states, that he has employed it in cases of epilepsy, gutta serena, &c., and that he can confidently recommend it as a remedy entitled to attention. In two instances in which he used it, considerable salivation was produced.

Various other errhines are mentioned by writers on the materia medica, but of which I consider it superfluous to give any particular account. It will be sufficient merely to mention their names, the principal of which are: beta, betonica, majorana, hedera terestris, euphorbium, origanum, achillea, ptarmica, &c.

CHAPTER XIV.

II. *Medicines that Increase the Action of the Urinary Organs.*

DIURETICS.

Diuretics are such remedies as promote the discharge of urine. Some articles of this class appear to be absorbed into the circulation, and act directly upon the secretory vessels of the kidneys; others produce their effects in a more indirect manner, acting primarily, on the stomach, and propagating a sympathetic action to the kidneys. There are others, that act by promoting absorption, augmenting thereby the quantity of serous fluid in the blood-vessels, in consequence of which, the renal emunctories are excited into increased action.*

That many articles of this class are absorbed into the circulation, and act directly upon the secretory vessels of the kidneys, is demonstrated by the re-appearance of these substances in the urine. I have, however, already dwelt particularly on this subject when speaking of the general modus operandi of medicines, and shall therefore not say any thing further on this point, in the present place. With regard to the latter mode of producing diuresis, that is, by exciting the action of the absorbents and inducing serous repletion of the blood-vessels, it will be proper to be more explicit.

* Murray's Materia Medica.

The emunctories of the animal system are outlets to the effete matters, or the superabundant and imperfectly animalized fluids, circulating in the blood-vessels. They are "the scavengers of the animal economy," whose activity is proportionate to the mass of materials which is to be thrown off. If the blood be deprived of its serous parts by dropsical effusion, the skin and kidneys, being less excited to active excretion, on account of the deficiency of the materials which they are destined to remove, become inactive, whilst the exhalents from which the dropsical effusion takes place, continue by a sort of vicarious office to separate from the blood its watery portion.

If in this state we prescribe a remedy whose effect is simply to excite the secretory vessels of the kidneys, as, for instance, squills, we will seldom produce any augmented secretion of urine, because the necessary materials for the secretion of the urine do not exist in sufficient abundance in the blood. If, however, we unite with this simple diuretic another article, possessing the power of exciting the re-absorption of the effused fluid, we at once stimulate the vessels of the kidneys, and furnish them with an augmented portion of the materials of secretion. It is on this account that we often derive so much advantage from the union of squills and calomel in dropsy; and it is upon the same principle that the action of diuretics is increased by copious draughts of mild diluents. The system appears to be equally incapable of bearing with impunity, too small or too large a portion of serous fluid in the blood. As soon as this part of the circulating mass becomes more than ordinarily augmented, the kidneys or the skin are excited into action to reduce its quantity; and hence, we often excite the action of the kidneys, by indulging our patients in the free use

of milk drinks. But although diluents are certainly useful, in cases of dropsy, to excite the action of the kidneys, yet when once this effect is produced, and the absorption of the effused fluid takes place, they ought to be less liberally used, since, by supplying the blood-vessels with a sufficient quantity of watery fluid, there will be less demand made upon the absorbents, and consequently a slower reduction of the dropsical effusion.

The action of diuretics is also promoted, in *full* and phlogistic habits, by whatever lessens arterial excitement, or diminishes the quantity of fluid circulating in the system. Thus, bleeding and cathartics sometimes do essential service, in this way. There is no contradiction, in this statement, to the one made above,—that copious draughts of diluents often increase the efficacy of diuretics, by furnishing the vessels with a more abundant share of watery fluids. In opposite states of the system these contrary means produce, indeed, precisely similar results. They both increase diuresis by favouring the absorption of watery fluid. The only difference that subsists between bleeding and plentiful dilution in this respect is, that the former increases the activity of the absorbents, and lessens the rapidity of serous effusion, whilst the latter acts simply by furnishing the absorbents of the alimentary canal with a greater quantity of fluid for absorption. It must also be observed that bleeding and catharsis can only be useful in this respect in cases where the blood-vessels are full and active; whilst, on the contrary, copious draughts of bland liquids are particularly suitable, where the system is less plethoric, and the blood has already been much exhausted of its serum. It is not difficult to understand in what manner the discharge of urine is augmented, by the plentiful use

of water; but how depletion, or the reduction of arterial excitement, acts in increasing the vigour of the absorbents we are not able to explain. The fact, however, is fully ascertained, not only by the effects of bleeding and purging in the treatment of dropsy, but also by the direct experiments of Magendie, who has recently demonstrated, what, indeed, has been noticed before, that absorption is accelerated or retarded in proportion as the quantity of fluid circulating in the blood-vessels is increased or diminished.*

Much dispute existed formerly with regard to the propriety or impropriety of allowing dropsical patients to indulge freely in the use of mild and diluent drinks. Although copious draughts of water will in general increase the quantity of urine, I can, nevertheless, not believe that any essential advantage will often result from a very great indulgence in this way. For if the urine be increased by the copious use of drink, it is to be observed, that the source of this increase is not so much in the absorption of the dropsical fluid deposited in the cavities of the body, as in the absorption of the water taken into the stomach and bowels from without. Hence it is, that, however copious the discharge of urine, dropsical swellings will often diminish but triflingly, or remain stationary, or even increase. To torture the patient, however, with excessive thirst, is not only useless, but absolutely pernicious. A pretty free use of mild drinks should always be allowed; thirst ought never to be suffered to become so intense as to produce general irritation.

It may be observed as a general rule, that in all cases in which the blood contains an excess of serum, copious draughts of diluent drinks should be avoided. Where, on the contrary, the blood is found to contain

* Journal of Experimental Phisiology, by M. Magendie, 1821.

but a small proportion of serous fluid, the crassamentum being in excess, the free use of bland drinks may be advantageously allowed.

How an increased secretion of the kidneys can reduce dropsical accumulations, is difficult to perceive. It cannot be wholly from any direct action which diuretic remedies may exert on the absorbent system; since we have it from very high authority* that dropsies have been cured by the free use of diluent drinks alone; and it will hardly be contended that such a remedy could exercise any direct influence over the absorbents. I am inclined to believe that the explanation must be sought for in the following circumstances. When the discharge from the kidneys is much increased, in a case of dropsy, we not only determine the serous discharge to these emunctories, but lessen the general mass of this portion of the blood, and consequently lessen the effusion from the exhalents furnishing the dropsical fluid. Now, if the exhalation from these vessels be diminished, and the regular discharge from the kidneys be re-established, the dropsical accumulations must gradually disappear, although the absorbents remain in the same condition, with regard to the degree of their activity. But independent of this effect of diuresis in diminishing accumulations of effused fluids, there are other results which we have reason to believe take place, concomitantly with those just mentioned, and which still further increase the efficacy of diuretics in dropsy. I have stated above, that depletion favours, in a very decided way, the absorption of fluids; hence when the blood-vessels are suddenly deprived of a portion of their serous fluid, by the action of a diuretic, nature, making an effort to sustain the

* Dr. Cullen.

necessary proportion of this component part of the circulatory mass, excites the absorbents into more vigorous action, in order to supply the deficiency which the animal economy experiences.

From the great and rapid reduction of strength, produced by excessive discharges of urine, as in diabetes, it is evident that the general powers of the system are much under the control of diuretic remedies. They are accordingly often employed as depletory remedies in sthenic diseases. In gout, and rheumatism especially, they have been recommended as highly useful, when employed in conjunction with cathartics. Dr. Scudamore, speaking of the treatment of this disease, says, "In imitation of nature's efforts to remove redundant matter by the medium of the kidneys—an action, the existence of which I think myself entitled to infer from my experiments—we are to keep the corresponding treatment attentively in view; and I have invariably employed, with the greatest advantage, purgative and diuretic medicines conjointly, so that the exhalent vessels of the alimentary canal and the secreting function of the kidneys, are stimulated to increased action at the same time."*

In the treatment of chronic dysentery too, diuretics have been prescribed with a view of determining the discharge of fluids from the intestinal vessels to those of the kidneys.† Celsus, in his account of the treatment of dysentery, says, "Et ea, quæ urinam movent, si ea consecuta sunt, in aliam partem humorem avertendo prosunt."‡ On the principle here mentioned by Celsus, diuretics are sometimes found to produce useful results in affections of the breast and head. I have known a

* Scudamore on Gout, p. 100.

† Bampfield on Tropical Dysentery, p. 165.

‡ Celsus, de Medicina, Lib. iv. Cap. xv. de Dysenteria.

case of gutta serena cured by the employment of cream of tartar and calomel, in large doses, the immediate and only sensible effect of which was constant and copious diuresis.

Diuretics have also been known to produce beneficial effects in certain affections of the pulmonary organs. Upon this subject Dr. Armstrong makes the following interesting observations. "The apparent benefit which I have seen to result from sudorifics and diuretics in some cases of threatened consumption, would alone seem to indicate the applicability of medicines which act upon the kidneys and skin in certain examples; but as my own experience is defective on this point, I recommend it to the notice of others, as well from practical as pathological considerations." Again, he observes: "As the skin and *kidneys* both closely sympathize with the lungs, is it probable that diseases of the latter might be benefitted by certain articles of food which operate on the former?"

Diuretics are said to be a powerful auxiliary in the cure of ulcers situated on the lower extremities, and attended with œdema of the leg.*

In various affections of the urinary organs, diuretic remedies are especially indicated, and often afford very decided advantages. In ulcers of the kidneys, or inflammation of the mucous lining of the bladder and urethra, balsamic diuretics may in general be usefully employed. These appear to act, in the cure of affections of this kind, by medicating the urine, which coming into immediate contact with the diseased part, act upon it as a local remedy. It is in this way, no doubt, that balsam copaiva and turpentine cure gonorrhœa. They impregnate the urine with their peculiar medici-

* Lond. Med. and Phys. Jour. No. 162.

nal qualities, which, being passed through the urethra, acts upon it in the same way that injections do.

If we admit, as I am fully disposed to do, that diseases do occasionally depend on a deteriorated state of the blood, we must regard diuretic remedies as a most important class of medicinal agents in the cure of such diseases. The kidneys, perhaps, more than any other emunctory of the animal economy, are an outlet to such portions of the circulatory mass as are effete, or foreign and inimical to the regular actions of the system. We find, too, that the solution of diseases is more frequently attended by a critical discharge of urine than by any other of the excretions. Diuretic remedies have accordingly been recommended in a variety of chronic diseases, which appear to be accompanied by a morbid condition of the fluids; such as scurvy, elephantiasis, &c.

In the beginning of this chapter it is stated that cathartics promote the operation of diuretics. It must be observed, however, that quite the contrary effect ensues from purging, when induced either by the diuretic medicine itself, as sometimes occurs when the dose is very large, or from the simultaneous exhibition of some cathartic medicine. When purging is thus produced, a check is put to the absorption of the diuretic remedy, in consequence of the rapidity with which it is hurried through the alimentary canal; and there is, moreover, a direction given to the discharge of the humours, by the intestinal exhalents. These observations are particularly applicable to the saline diuretics, having a *vegetable* acid as a constituent. "The supertartrate of potass, or *cream of tartar*, acts in well regulated doses, as we all know, upon the kidneys; the tartaric acid being in this case abstracted, and assimilated by the digestive process, and the alkaline base at the same time eliminated and subsequently absorbed; but

if we increase the solubility of the compound, by reducing it to the state of a neutral tartrate, (*soluble* tartar,) or by combining it with boracic acid, or some body that has a similar effect; or, what is equivalent to it, if we so increase the dose of the cream of tartar that catharsis follows its administration, then diuresis will not ensue, since no decomposition can take place under such circumstances; for it is a law of the animal economy, *that the process of assimilation and absorption is arrested, or very imperfectly performed during any alvine excitement.*"*

DIGITALIS PURPUREA.—FOXGLOVE.

Under the head of narcotics, an account is given of the remediate effect of digitalis, so far as they seem to depend on its sedative virtues. In the present place, therefore, I have only to speak of it in relation to its property as a diuretic,—a property to which, indeed, it owes some of its most important medicinal effects.†

* Paris's Pharmacologia.

† The appearances of the urine were at one time regarded as of the utmost consequence, in forming a proper opinion of the character of diseases. —At present this excretion is unquestionably too much neglected; by an attention to it we will often be greatly aided in our judgment of the nature of diseases. Dr. Prout, observes, "A diminished flow of urine accompanies active inflammation, and an inflammatory state of the system in general. The urine is invariably of a deep colour.

"An increased flow of urine, or diuresis, very constantly accompanies those diseases connected with a peculiar state of nervous irritability, as hysteria. It may be also produced by certain passions of the mind, as fear. Lastly, it may be induced by local irritants acting on the urinary organs themselves. In those cases the urine is always of a pale colour.

"Thus, generally speaking, nothing can be more opposite than the conditions of the system, and consequently the principles of practice, indicated by a diminished or increased flow of urine. Hence, they are symptoms of primary importance in all diseases in which the urine is concerned; and, whatever may be the disease, seldom fail of furnishing us with a clue to the principles upon which it is to be treated."—*An Inquiry into the Nature and Treatment of Gravel, Calculus, and other Diseases connected with a Deranged Operation of the Urinary Organs. Lond.* 1821, *p.* 35.

The diuretic powers of this medicine, seem to be entirely independent of its narcotic effects. It is even stated by some very eminent writers, that its diuretic and narcotic operations are incompatible. Dr. Ferriar observes, "that when given in such quantities as to excite nausea, or to produce evident narcotic effects, it does not operate as a diuretic." Withering expresses the same opinion.

Although it must be admitted that the sedative and diuretic powers of digitalis are very generally exerted independently of each other, yet there can be no doubt, that though not necessarily connected, they are occasionally found to act concomitantly, and are at least not incompatible.* Conceiving that the curative powers of digitalis in dropsy are dependent upon its sedative effects, Blackall and Paris disapprove of the common practice of prescribing this remedy in combination with calomel, since this latter article always excites the action of the heart and arteries, and is therefore inconsistent with the sedative operation of digitalis. I feel persuaded, however, that this objection is entirely hypothetical, and wholly unsupported by experience and correct observations. Were it a fact, that the diuretic effects of this medicine are dependent on its sedative powers, the impropriety of such a combination would be evident; but as no such dependence exists, inasmuch as the diuretic effects of the medicine are generally most conspicuously evinced, when the action of the heart and arteries is least reduced, and on the contrary, often entirely wanting, when the sedative effects are most powerful, it does not seem

* Dr. Ferriar observes, "that the diuretic action of digitalis, though independent of its sedative powers, may sometimes take place in conjunction with the latter, and may even co-operate with it, by its effect on the system as an evacuant."—*Essay on Digitalis.*

reasonable to ascribe any unfavourable consequences, to the mere stimulant effects of calomel upon the diuretic operation of digitalis, with which it is, sometimes, combined. Although digitalis occasionally acts very powerfully as a diuretic, it is not to be regarded as very certain in its operation. In general, where it produces any good effects in dropsy, it does not require a long time before it manifests its diuretic powers. Dr. Ferriar observes, in relation to this point: "if no beneficial effects be perceivable in the course of a few days, I exchange the digitalis for some other diuretic." I have myself repeatedly noticed this circumstance, in my experience with this remedy; and I believe, that it will seldom be proper to continue it more than seven or eight days, if no manifest diuretic effects ensue.

Great diversity of opinion exists, among writers, concerning the remediate powers of this medicine in hydropic diseases. Some physicians, of eminence, have extolled its virtues in the most extravagant terms; whilst others have not been willing to concede to it any properties, in this respect, whatever. The weight of good testimony is, however, in favour of the anti-hydropic virtues of this article, and almost all agree in opinion, at present, that, though not very commonly adequate to the cure of dropsy, it is nevertheless a remedy of valuable powers, and deserving of particular attention in the treatment of such affections.

Dropsy is a disease by no means so uniform in its character and causes as is generally supposed. It arises in the most opposite states of the system, with regard to vascular action and repletion; it may depend on various organic affections; or appear as a consequence of different acute and chronic diseases; and the urinary secretion varies essentially, in character, in

different cases. These circumstances point out some diversity in the character of the disease itself, and it is not reasonable to suppose, that any particular remedy is equally applicable to the disease under all these diversities of disposition. It appears, indeed, from the experience of physicians, that digitalis is peculiarly under the influence of circumstances of this kind, and hence, no doubt, have arisen the contradictory statements that have been made by writers concerning the anti-hydropic effects of this medicine. By Dr. Withering we are informed, that, in his practice, the digitalis seldom succeeded in curing ascites or anasarca, in persons of tense fibre and great general strength of system; on the contrary, however, it hardly ever failed to produce conspicuous diuresis, in persons having a feeble or intermitting pulse, much laxity of fibre, with a pale countenance and cold skin. Dr. Maclean, in his excellent work on hydrothorax, confirms these observations, and observes, in addition to what Withering has said, that he seldom derived any benefit from the medicine in persons of a fat corpulent habit, connected with a dull, sluggish, inirritable fibre, but that he generally succeeded well in relieving those of a "weak, delicate, irritable constitution, with a thin, soft, smooth skin, which in the anasarcous limb is transparent."

Dr. Thomas states, that in cases where the urine does not coagulate by heat, he usually found digitalis unsuccessful; where the visceræ were sound, however, or the habit not entirly depraved, he found it to succeed. He also observes, that when the digestive organs fail, and there is frequent sickness or diarrhœa, with a bad habit of body, the use of this remedy has appeared to be injurious. With regard to its relative value in hydrothorax, ascites, and anasarca, the evi-

dence of practitioners is contradictory, and does not afford any conclusions worthy of confidence. Dr. Blackall, who has paid very great attention to the different varieties of dropsy, and especially to circumstances connected with the urinary secretion, observes, that in dropsies consequent to scarlatina, in which he invariably found the urine to coagulate by heat, he derived important advantages from the use of digitalis, in conjunction with blood-letting.

As digitalis, generally, operates most beneficially in dropsy, when united with other diuretic or hydragogue remedies, it is not commonly employed alone, but combined, usually, with calomel, squills, Dover's powder, cream of tartar, &c. Dr. Ferriar was in the habit of giving cream of tartar early in the morning, in doses sufficient to purge, and digitalis with opium, in increasing doses, every evening. If there was naturally a tendency to purging, he gave the digitalis "in half-grain doses, at intervals of five, six, or eight hours, with the usual precautions." I have seldom employed this medicine by itself in dropsy. My practice has almost invariably been to combine it with acetate of potass or squills, and frequently also with calomel and Dover's powder, as directed by Dr. Ferriar.* Squills and the saline diuretics appear to be particularly qualified to increase the diuretic properties of digitalis. The reason of this does not appear to be very difficult to explain, if we adopt the opinion expressed by Dr. Maclean concerning the modus operandi of this medicine as a diuretic. He regards the beneficial effects of digitalis, in dropsy, as dependent mainly upon its powers of increasing the activity of the absorbents.

* The formula which Dr. Ferriar generally used, contains pulv. digitalis gr. 1-2, calomel gr. i. pulv. Doveri gr. viii. made into pills. To be taken at bed-time, and repeated during the day according to circumstances.

This opinion derives very considerable support from the fact, that this remedy very rarely produces any diuretic effects in persons unaffected by dropsical effusions, and in whom, consequently, no sudden repletion of the vessels, by absorption, can take place. The same circumstance takes place with regard to the operation of calomel. In subjects where no effusion exists this remedy hardly ever manifests any diuretic operation. In persons, however, labouring under dropsical collections, the diuretic effects of this medicine are often very powerful and sudden. These effects can hardly be explained upon any other principle than the absorption of the dropsical collections, in consequence of which the vessels become suddenly overcharged with serous fluid, which is eliminated either by the bowels in the form of a diarrhœa, or by the salivary glands, or by the kidneys. If these views be correct, and I am much inclined to put confidence in them, the fact that squills and some of the saline diuretics have a tendency to increase the diuretic operation of digitalis, would appear to be explicable upon the principles mentioned in the preliminary observations to this chapter; namely, that whilst the absorption of the effused fluid is increased by the action of the digitalis, and consequently a greater portion of serum poured into the blood-vessels, the other remedies act more immediately upon the kidneys, and increase their functions, by which the absorbed fluid is again discharged. From this view of the subject we see, too, why calomel has a greater tendency to increase the diuretic effect of squills than of digitalis; for with the former it produces the double and direct effects of absorption and renal action, whilst with the latter it can only produce increased absorption, which may or may not excite the action of the kidneys.

The best form for administering this medicine with a

view to its diuretic operation is, an infusion of the leaves. The infusion of digitalis, directed by the London and Edinburgh Dispensatory, may be taken in the dose of from ℥ss. to ℥i. twice a day, and gradually increased, until symptoms arise which require its suspension, such as slow pulse, accompanied with nausea, palpitations, faintness, purging, and great prostration. Dr. Blackall, in his excellent treatise on dropsies, mentions another symptom of the undue effects of this medicine, which it may be of importance to bear in mind; he states that the continued use of digitalis, or an overdose of it, occasionally produces a tensive pain of the head, extending sometimes over one eye, and attended with a disturbance of the brain, which precedes other bad symptoms, and which, if not attended to and speedily obviated, often terminates in convulsions or death.

Its narcotic effects, when too violent, are best counteracted by stimulants, such as brandy and water, opium, and volatile alkali, &c. The sulphate of iron, and the infusion of cinchona, produce precipitates, when added to the infusion of digitalis.

Formulæ.

℞.—Pulv. digitalis
Calomel — āā ℈i.
Pulv. scillæ — ℈ii.
Conserv. rosar. — q. s.—M. Divide into twenty pills.
Dose, one pill three times daily.

℞.—Acid tartar. — ℈i.
Sodæ carbon — gr. xxiv.
Infus. digitalis fl. — ℥ss.
Spir. nitr. dulc. — ʒi.
Tinct. scillæ — gtt. x.
Aq. menthæ — ℥ii.—M. Dr. James Johnson recommends this mixture as a valuable diuretic in ascites. The whole of the mixture is to be taken at once, and repeated twice or three times daily.

℞.—Pulv. digitalis — gr. xii.
Calomel — gr. viii.
Pulv. doveri. — gr. xxxii.—M. Divide into eight equal powders. Take one every six hours, in hydropic cases attended with gastric or intestinal irritation.

SCILLÆ RADIX.—SCILLA MARITIMA.—SQUILL ROOT.*

This is one of the most certain, efficacious and valuable diuretics we possess. Like digitalis it is rendered much more active in its operation as a diuretic, by combining it with some other articles of this class, and particularly by giving it in union with calomel. I have already spoken of the propriety of uniting it with calomel, in cases where we wish to evacuate dropsical effusions. The squill seems to increase diuresis by stimulating the kidneys to invigorated action, and calomel, it is well known, has a powerful tendency to promote absorption. By uniting these articles together, therefore, we obtain a remedy which enables us at once to excite the action of the absorbents and the kidneys, and thus, in the most effectual manner, promote the removal of dropsical collections. The late Dr. Home of Edinburgh supposed that the diuretic effects of this medicine were greatly enhanced by uniting it with such articles as are capable of promoting its emetic operation; or by giving it in sufficient doses to produce decided impressions on the stomach and bowels. Directly the reverse of this opinion was strenuously advocated by Dr. Cullen, who maintained that the diuretic effects of the squill are generally much less conspicuous when it operates strongly on the stomach and intestines, than when it produces no sensible operation on these organs. The reason of this he conceived to be, that by such effects on the bowels the medicine is "prevented entering the blood vessels, and thereby reaching the kidneys." Whether we admit this explanation or not, the fact is, I believe, fully established that not only this, but every other article belonging to

* A particular account of the natural history of this root has already been given under the head of Emetics.

this class of remedies, is less apt to produce diuresis when it either purges or vomits, than when no such effects are produced. Upon this subject Dr. Blackall observes, "it never operates so favourably as when it is given in the fullest quantity which the patient can bear without sickness." This corresponds with the experience of other writers who speak of this remedy. It appears to be admitted on all hands, that the remedy is, in general, more apt to afford relief in hydrothorax, than in any of the other varieties of dropsy.* "In the early stage of this disorder," says Dr. Blackall, "medical treatment does a great deal, principally by means of diuretics: and squills is by far the most powerful of them." "It is particularly useful," he says, "where, with an oppression of the chest, the urine is scanty, high-coloured, full of sediment, and without serum. Its use, however, is not limited to this state; I have sometimes seen it render service where the urine is partially coagulable. But in proportion as that symptom becomes more marked by its extreme constitutional characters, inflammation, and a weakness of the digestive organs, it fails in its effect, or is even injurious." He recommends it to be given, at first, in doses of thirty drops of the vinegar or tincture, three times a day, and gradually increased to forty or fifty drops. When it does not act entirely as it could be wished, "the addition of a grain of calomel," says the same writer, "every night, is frequently followed by a great flow of urine at the same time that the salivary glands are effected." Dr. Maclean, also, speaks in very high terms of the efficacy of squills and calomel in hydrothorax. I have, myself, uniformly obtained more advantage, in this disease, from these two articles in union with nitre, than from any other diuretic I have ever

* Blackall, Maclean, Van Swieten, &c.

employed. Such a combination is particularly efficacious, when it produces inflammation of the gums and the glands about the throat. The reason why calomel and squills are more apt to afford relief in hydrothorax than in the other varieties of dropsy, may be owing to a threefold operation: it promotes absorption, excites the urinary discharge, and, by determining the circulation particularly to the glands of the mouth and throat, it causes a derivation from the exhalents of the pleura, and thereby lessens the dropsical exhalation. The exhalents of the cavity of the thorax, would be more likely to be influenced by such an afflux to the glands of the mouth and throat, than those situated more remotely, and hence, perhaps, arises the more speedy relief which is commonly procured in hydrothorax by such a combination of remedies, than in ascites and anasarca. The expectorant operation of squills, is also a circumstance which would seem to render it more suitable in dropsies of the chest than the other diuretics.

The diuretic operation of squills is said to be assisted by the mistura ammoniaci and spiritus ætheris vitriolici;* and Dr. Ferriar observes, that "in some habits the combination of tincture of squills, with syrup of buckthorn, proves very powerfully diuretic."

Dose: from one to four grains, in substance. Tincture and vinegar of squills, from thirty to sixty drops.

Formulæ.

℞.—Pulv. scillæ ℈i.
—— nitrat. potass. ʒii.
Calomel gr. v.—M. Divide into ten equal parts. Dose, one powder every four hours.

℞.—Pulv. scillæ gr. viii.
—— pip. nigr. gr. x.
—— nitr. potass. gr. xviii.
Calomel gr. iv.
P. opii gr. ii.—M. Divide into three equal parts. Take

* Blackall.

one every morning, noon, and evening. According to Richter, this is a peculiarly useful diuretic in hydropic cases, attended with much languor and relaxation of the system.

℞.—Pulv. scillæ gr. xv.
Calomel gr. v.
Pulv. doveri ℈ii.—M. Divide into ten equal parts. Take one three times daily. This mixture is well adapted to hydropic cases, attended with gastric or intestinal irritations.

COLCHICUM AUTUMNALE.—MEADOW SAFFRON.

The colchicum autumnale is a perennial plant, growing in abundance in the temperate climate of Europe, and may be conveniently cultivated in our gardens. "The root is a double succulent bulb. The flower is large, of a purple colour, and comes directly from the root. The leaves appear in spring, and are radical and spear-shaped. Corolla consisting of a simple petal, divided into six lance-shaped erect segments. Capsule three-lobed, divided into three cells, containing globular seeds, which are not ripened until the ensuing spring, when the capsule rises above the ground upon a strong peduncle. It flowers in autumn, when the old bulb begins to decay, and a new one is formed. In the following May the new bulb is perfect, and the old one wasted and corrugated. The roots are dug for use in the beginning of summer.*

When fresh, the root possesses extremely active powers, producing, according to the observations of Stœrk, when taken in a dose less than a grain, "a burning heat and pain in the stomach and bowels, strangury, tenesmus, thirst, total loss of appetite," and in larger doses, violent and even fatal effects. Its active principle resides in a milky fluid, and consists of a peculiar alkaline principle, similar to the veratria obtained from the white hellebore. It contains ex-

* Thornton's Family Herbal.

tractive matter, "which, when in solution, undergoes a chemical change." It has been ascertained by Sir E. Home, that the deposit which takes place in the vinous infusion, produces nausea and griping, and that the efficacy of the medicine is not destroyed by removing the deposit. The alkaline principle exists in combination with gallic acid,* which, when snuffed into the nose produces violent sneezing, and vomiting and purging when swallowed. Colchicum, taken in duly regulated doses, acts as a sedative upon the nervous and sanguiferous systems, allaying inflammatory pain, and moderating the action of the heart and arteries. It possesses also considerable diuretic properties, and when taken in full or frequently repeated doses, it produces nausea and copious purging. Neither of these evacuant effects are, however, very constant results of its exhibition, nor does it appear that they are essential to its remediate influence, in many of the diseases for which it is prescribed.

It is thought by many, that the colchicum autumnale, which has of late become so important a remedy, is the hermodactylus of the ancients. This appears, indeed, very probable, when we compare the description which Dioscorides gives of colchicum, with Withering's account of the English meadow saffron. They agree perfectly in giving the very same distinguishing marks to the plant which they respectively describe. Now Serapion, in his description of hermodactylus, employs "the very words in which Dioscorides describes colchicum."† It is therefore quite evident, that these writers must have had the same plant in view in their

* Annals de Chimié, tom. xiv., Mai, 1821.

† Medical Sketches, B. G. Kerr. From this little work I have drawn the principal part of my historical account of this plant.

descriptions. It appears, also, that in England, at no very remote period, colchicum was known by the name of hermodactylus. "In an English translation of Wirtzung's Praxis Medicinæ Universalis, printed in the time of Queen Elizabeth, we have the following passage: 'Hermodactylus, in Greek colchycum, in Latin ephemerum deleterium. Our common hermodactylus is the hermodactyle root and true colchycum, which Galen calleth ephemerum deleterium.' "* And Sir John Hill says, in his British Herbal, that "no one who has seen the hermodactylus of the east, and compared it with the meadow saffron of England, can for a moment doubt that they are the same plant."

The colchicum was in high repute among the ancients, and prescribed for the very diseases in which it is at present so much commended. It had, however, nearly sunk into total neglect, when Mr. Want of London, within a few years past, again brought it into notice, as forming the active principle of the *eau medicinale*, D'Husson so much extolled for its remediate powers in gout. This opinion concerning the identity of the colchicum and the eau medicinale, is advocated by Sir Everard Home, in a paper published in the Philosophical Transactions;† but is strongly contested by Scudamore and others.

Be this as it may, it seems to be conceded very generally, that the colchicum is a remedy of great powers in gout and rheumatism. It is not, however, allowed on all hands to be always a very safe remedy. It is stated, by very high authority, that although generally speedily effectual in removing the local symptoms of pain and inflammation in gout, it has a tendency "to leave the disposition to the disease much stronger in

* Medical Sketches, by B. G. Kerr.

† Part ii. 1816.

the system, and lead to still more calamitous, because still more constant pains of the chronic form of the disease."*

This writer, however, does not disapprove of colchicum when properly administered, but speaks of it, on the contrary, in terms of confidence and praise. When given in the subjoined formula,† "it produces all the good effects," he says, "of which the medicine in its other forms is capable, and is not chargeable with any one ill consequence."

I have, myself, employed the colchicum, both in acute and chronic gout, and in most cases with prompt and complete success. Its remedial powers, in gouty inflammation, are indeed very extraordinary. I have known violent attacks of acute gout, completely subdued, in the course of twenty-four hours, by its use; and in no instance have I witnessed any injurious consequences to result from its employment.

Colchicum is also a valuable remedy in rheumatism. Its use was, at first, entirely restricted to the chronic and sub-acute forms of the disease. Experience, however, has shown, that it may be safely and often very beneficially administered, even in the most inflammatory cases of the complaint. When administered in acute cases, until it excites purging, it seldom fails to moderate the local inflammation, and general arterial excitement, rendering the pulse smaller, softer and less frequent, and mitigating, very considerably, the severity of the pain. Mr. Haden asserts, that in his practice, "it has proved itself a remedy of eminent power, in controlling the action of the heart and arte-

* Scudamore on Gout, p. 108. Amer. edit.

† R. Magnes grs. xv. ad xx. magnes sulphat. ʒi. ad ʒii. aceti colchici ʒi. ad ʒii. with distilled water most agreeable, and sweetened with syrup. To be taken at once, and repeated every four or six hours.

ries, and in curing those states of the constitution which we are taught to name diseases of excitement."* In pure inflammations, he says, if given every four hours until it purges freely, the pulse will become nearly natural, from being either quick and hard, or slow and full. The form in which he employed this remedy is a powder, composed of one part of powdered colchicum, three of carbonate of potash, and five of sulphate of potash. Of this he gave one drachm three or four times a day, in half a pint of warm water, in the state of effervescence, with tartaric or citric acid. If this fail to move the bowels freely by the second or third day, he gave salts or the infusion of senna to quicken its operation. As the strength of this preparation must depend much on the manner in which the colchicum is dried, and as, moreover, its active powers are much weakened by this process, it is evident, that the remedy must be liable to great variations of strength. Professor Chelius states, that while patients affected with gout or rheumatism make use of colchicum, a very remarkable increase of lithic acid takes place in the urine; and he attributes to this circumstance the great benefits which it produces in these affections.

With regard to the employment of colchicum, with a view to its diuretic operation, late experience does not appear to speak much in its favour. By baron Stœrck, however, it was regarded as a very powerful diuretic, and exceedingly useful in dropsy. Having ascertained by experiments on himself that the oxymel of colchicum taken in doses of a tea-spoonful, produced copious discharges of urine, he made trial of

* Practical Observations on the Colchicum Autumnale, as a general remedy of great power in the treatment of Inflammatory Diseases, both acute and chronic, &c., by Charles T. Haden, surgeon, 1820.

this remedy "in the hospital at Vienna, in desperate hydropic and other serous disorders, in which it was always found to act without disturbance as a most potent diuretic, after the common medicines employed with that intention had failed." He commenced with a drachm twice a day, and gradually increased the dose to an ounce, and occasionally an ounce and a half a day. I have seen it employed in one case of dropsy only, and in this instance it excited copious diuresis, without, however, effectually removing the disease.

This remedy has also been recommended in humoral asthma; of its powers in this disease, however, there is nothing extant, so far as I can ascertain, which is calculated to attract the attention of the profession.

Chelius states, that he has employed this article with signal advantage in rheumatic ophthalmia, and in articular dropsies. He has, also, derived great benefit from its use, in prosophagia, and in paralysis of the inferior extremities, produced by an arthritic cause.

Within the last year, the seeds of the colchicum autumnale have been introduced to the attention of the profession, as a remedy of extraordinary powers in the cure of chronic rheumatism, and greatly superior in every respect to the root of this plant. Dr. W. H. Williams, of Ipswich, in England, to whom the credit is due of having first brought before the profession the remediate properties of the seed, says: "Much as the powers of the root of this plant have been extolled by different writers, I cannot omit this opportunity of declaring my decided conviction, that, however successfully different preparations of it may have been occasionally administered, its uncertain effects, the violence sometimes accompanying its operation, the little reliance to be placed upon the experiments hitherto made to ascertain the exact period of the perfection of

the bulb, and the deterioration it frequently undergoes in keeping, are objections so weighty, that its value in the materia medica is insignificant, compared with the immense advantages attending the exhibition of the seeds." He states that he exhibited the vinum seminum colchici* to a great many patients, some of whom were severely afflicted with chronic rheumatism, and he declares that he was astonished by the rapidity with which the pains were removed and the use of the limbs restored. He directs it to be given two or three hours after breakfast, and repeated at bed-time. "With respect, more especially, to the vinum seminum colchici," he says, "of the safety of which I have experienced much abundant proof, I cannot contemplate an extensive use of it in many painful diseases, besides chronic rheumatism, without entertaining the hope and belief that we have at length found the happy desideratum; a powerful, yet mild medicine, capable of substituting calmness, tranquillity, and balmy sleep, in the place of pain, weariness, and restless nights—a renovation of long lost limbs, and comparatively robust health, in lieu of feebleness and emaciation."† I fear, however, that this flattering account of the sanative virtues of our remedy will not be verified to the full

* ℞.—Sem. colch. autumn. siccat. ℥ii.
Vini Hispanici (Sherry Angl.) Octan. i.
Digere per dies octo vel decem, subinde agitando, dein per chartam cola, et in vasi probé clauso usui serva. Dose, ʒi. twice a day, gradually increased to ʒiii. Dr. Williams states, that "the acidum aceticum and the spiritus ammoniæ aromaticus, imbibe the powers of the seeds in the same proportion as sherry; that an abundant aqueous extract may be obtained from the seeds, but no oil, and the water distilled from them appears totally inactive."

† Observations, with Cases illustrative of the salutary powers of the Seed of Colchicum Autumnale, &c. &c. by William Henry Williams, M. D. F. L. S. See London Medical Repository for August, 1820, and June, 1821.

extent. There can, nevertheless, be no doubt, from the statements we have had, that it possesses very active powers; and although it is not probably entitled to the high encomiums bestowed upon it, there are just grounds to expect from it very important remediate results.

The flowers, also, possess the peculiar medicinal virtues of the seed and bulb. It has, indeed, been asserted, that the flowers furnish the mildest and most efficacious preparations of this plant. The editor of the London Medical Repository states, that "from the experiments which he has made, he was entirely satisfied, that the *eau medicinale* is nothing else than a tincture prepared of the flowers of colchicum.

Dr. Paris thinks, "that acids and oxygenating substances render the vinous infusion drastic; on the contrary, alkalies render its principles more soluble, and its operation more mild, but not less efficacious." The saturated vinous tincture is given in the dose of from a half to one drachm.

Mr. Richard Battley, chemist, of London, who appears to have paid very particular attention to the nature and properties of this root, and the best time for taking it, says, "that this root is deprived of its power, progressively, from the time of throwing out the new bulb until its final disappearance; and that, although very little change of appearance occurs during the winter months, it really undergoes a decided change during that period; that August before the new bulb is thrown out, is the proper season to procure the root; and that the various opinions, as to the medicinal properties of colchicum, have proceeded from the various states in which it has been brought into use.

"The root, when dug up in August, should be immediately cut into transverse slices, equal in thickness to

a half crown; to be then exposed, in wicker baskets without placing the pieces in contact, to a temperature of 170° to 180°, and so to remain until dried, which will require from two to three hours."*

NICOTIANA TABACUM.

Tobacco possesses very considerable diuretic properties, but on account of its extremely unpleasant and sickening effects, it is seldom employed as an internal remedy. Dr. Fowler, who has written a work on the employment of this remedy in dropsy and dysury, speaks very highly of its efficacy in these diseases. He recommends it to be used in the form of an infusion; and observes that the best time for administering it is about two hours before dinner, and on going to bed. Dr. Ferriar also employed it in some cases with success; though he does not speak of it as deserving much confidence. He gave it occasionally, in combination with other diuretics,† giving at the same time purging doses of cream of tartar in the morning. He states that he succeeded in several very unfavourable cases by this plan of treatment, and he thinks "that the action of the kidneys may in general be excited in this manner." I have employed the tincture of tobacco in two cases of dropsy, and although considerable diuresis was produced, no permanent advantage was gained. Tobacco has also been recommended in nephritis calculosa, and of late by Mr. Earle, in retention of urine from stricture. Under the head of narcotics, I have

* London Medical Repository, for July, 1820.

† ℞.—Oxymel colchic.
Oxymel scillæ.
Tinct. nicotian.
Spi. æther. nitros āā p. æ. misce. capeat cochleare parvulum ex aquæ pauxillo quater in die.

already spoken of its employment in this way; to which the reader is referred for a particular account of its various remediate powers.

LYTTA VESICATORIA.

Under the head of epispastics, I have given a particular account of the chemical character, and of the external employment of cantharides, and shall therefore confine myself in the present place, to a consideration of its powers as an internal remedy. Cantharides are a very ancient article of the materia medica. Hippocrates speaks of their internal employment in dropsy and amenorrhœa, and they are particularly mentioned in the writings of Dioscorides, Galen, and Pliny.

When taken internally, in an excessive dose, cantharides occasion a burning sensation in the fauces, throat, and stomach, producing inflammation of the intestines, and frequently blisters of the mouth and œsophagus. The heart and arteries are greatly excited, the pulse becoming full and hard, and the skin hot, like in inflammatory fever; the thirst is excessive and unquenchable; great anxiety is experienced, attended with retching, vomiting, diarrhœa, pains in the bowels, back, and joints, itching of the skin, vertigo, and syncope. But the most distressing and prominent operation of this article is its action upon the urinary organs. It produces, when taken in an over-dose, inflammation of the neck of the bladder and urethra, occasioning thereby the most painful dysury; the urine comes off drop by drop, being generally mixed with blood, and attended with excruciating pain; sometimes an entire suppression of it takes place, accompanied with the most distressing efforts to micturate. These symptoms are generally accompanied by the most

tormenting erections. These are the effects of the medicine when exhibited in exorbitant doses; when employed in small ones, instead of producing difficult and painful discharges of urine, or its total suppression, it excites a copious diuresis, and may often be very usefully employed where the evacuation is to be promoted. Cantharides have been recommended as a very useful remedy in typhus aud malignant fevers. Home administered the tincture with wine whey; and Ettmuller states, that he has often derived important advantage from the use of this tincture in malignant nervous fevers. Reil, also, speaks very favourably of the employment of this remedy in fevers, attended with torpor and prostration; and Jahn (Mat. Med. vol. i. p. 500) asserts, that he has administered it in conjunction with camphor and calomel, with signal advantage in malignant fevers.

In cases of dropsy attended with a weak and languid circulation, cantharides will frequently produce very good effects. It appears to be more especially useful in those cases of anasarcous effusions which sometimes supervene in persons recovering from scarlatina and other acute fevers. Dr. Ferriar reports some cases of this kind which speedily yielded to the conjoint employment of bark and tincture of cantharides. In anasarca, attended with a slugglish state of the circulation, Bucholz employed a mixture composed of two drachms of antimonial wine and half a drachm of tinct. cantharides, with the happiest effect. Hufeland, also, administered this mixture in similar cases with decided benefit.

Cantharides have been recommended as particularly serviceable in hydrothorax, accompanied with a relaxed habit of body. They are also mentioned by some writers as serviceable in humoral asthma, and in

other chronic affections of the breast. Burdach says, that cantharides in union with bark, or opium, or æther, are very serviceable in chin-cough, after it has already continued for a considerable time, and is attended with considerable atony of the general system. It should be given so as to excite slight pain in passing urine.

From what I have seen in my own practice, I am strongly inclined to believe that cantharides may be usefully employed in incipient phthisis, when it occurs in young females of relaxed habits of body, and suffering from amenorrhœa. In the œdema which often accompanies suppression of menses* in young chlorotic females, I have found the tincture of cantharides, with bark, a most useful remedy. By this remedy we at once invigorate the general system, promote the action of the kidneys, and determine the circulation to the uterine vessels, and thereby frequently reinstate the catamenia, and with them health.

From their powerful tendency to act upon the urinary organs, cantharides have been much employed both for the cure of incontinence of urine and suppression of this discharge from torpor or paralysis of the bladder. Nothing, indeed, has as yet been discovered which is so effectual in the former of these affections as this remedy. Where the incontinence arises from a paralysis of the sphincter of the bladder, we in general derive essential advantage from cantharides, given to the extent of producing slight strangury. It is equally serviceable for that species of incontinence of urine which many young people experience during sleep. We thus not only strengthen the sphincter muscles of the bladder, but greatly increase the sensibility of the neck of this organ, as well as of the upper part of the urethra, in consequence of which these parts contract

* See what is said of this remedy in the chapter of Emmenagogues.

the moment the urine comes in contact and irritates them, and thereby prevent its escape. An excellent mode of employing cantharides for affections of this kind is, to apply them externally, in the form of plaster, to the sacrum.*

Cantharides were formerly a good deal employed in gonorrhœa and gleet. Of late they have again been particularly recommended in the latter affection and in leucorrhœa. In the second volume of the Edinburgh Medical and Surgical Journal, Dr. Robertson has published an interesting paper on the employment of cantharides in these diseases. In gleet I have derived the most satisfactory results from this remedy. It is necessary, however, to give it in doses sufficiently powerful to produce a considerable ardor urinæ, and this effect should be sustained for some time. I have been less successful with the remedy in fluor albus: though in some cases I have known it to produce unequivocal good effects.

"There is no article of the materia medica," says Dr. Hosack, "used in any individual disease, the value of which ought to be estimated more highly than lytta in cases of seminal weakness and impotency." The introduction of this remedy in cases of this kind, in the United States, is due to Dr. Francis, of New York. In a letter which I have lately received from him, he observes: "My experience of the remediate powers of the cantharides, and its perfect safety and innocence, when given to a great extent, is such, that I administer it in doses of two or three drachms a day, and on some occasions have given it to the amount of one, two, or three ounces in twenty-four hours. I have not yet

* Of the use of Blisters applied to the region of the Os Sacrum, in the cure of Incontinence of Urine, &c., by Thos. Dickson, M. D. Medical Observat. and Inquir. art. xxvii. vol. 2.

failed in a single case of impotence, though I have had instances of this dreadful disease of four, five, or six years standing." Dr. Hosack mentions a remarkable case of this kind which came under the care of Dr. Francis and himself. It was induced by the mismanagement of a neglected syphilis, and the injudicious use of strong lead injections. The patient was reduced to such a state of mental anguish as to induce him to seek a termination from his wretchedness by self-destruction. "With this view he took nearly six ounces of the tincture of cantharides during the night. Yet no dangerous symptoms occurred: he admitted he felt a degree of warmth throughout his body to which he had been a stranger, and that his mind was less depressed than before the commission of this act of folly." He was now induced to take two drachms and a half of the tincture of cantharides three times a day in union with a dessert-spoonful of the tincture of amara, and to use a generous diet. In the course of three weeks he was completely relieved; "his virile powers resumed their wonted vigour, nor has he to the slightest degree relapsed into his former state of weakness."* It appears from experience, says Dr. Robertson, that the quantity of lytta requisite to keep up the irritation in the urinary organs is always proportionate to the "existing debility either of the general habit or of the generative organs." The use of cantharides in cases of this kind must not be soon relinquished if they should not immediately produce any obvious amendment. "Perseverance in the use of the remedy," says Dr. Hosack, "is a practical precept that must here be enforced. The extent to which it may be carried would, unaided by experience, seem incredible. Cures have been effected within a few days; at other times, from peculiarity of

* Appendix to Thomas's Practice, sixth edit. p. 1034.

condition, as many months or years have been required to accomplish the object in view."

Cantharides have also been recommended in cutaneous eruptions. Mr. Mead* and Dr. Carmichael mention their success in this respect. It does not appear, however, that the remedy possesses any particular powers in cases of this kind.

The strangury produced by cantharides is best obviated by copious draughts of bland liquids, such as flaxseed tea, gum arabic water, decoctions of barley, melon seeds, &c.

The dose of cantharides in substance is from one to two grains. It is best given with opium or extract of hyoscyamus. The tincture may be given from thirty to sixty drops.

In cases of poisoning from cantharides, it has been recommended to exhibit large doses of sweet oil; but the experiments of Dr. Pallas and Orfila prove that this is an exceedingly improper remedy in accidents of this kind. According to the experiments of the latter, cantharides macerated in cold oil, will, when exhibited to dogs, kill them in a few minutes. This depends on the property which oil possesses of dissolving the active principle of cantharides.†

BALSAM COPAIBÆ.

The tree‡ which affords this resinous liquid, grows spontaneously at Guiana, Brazil, in the country around Tolu, and in the Spanish West Indies. Deep incisions are made in the trunk of the tree, from which the balsam flows in considerable abundance. When it first

* Medica Sacra, p: 24.

† Journal de Pharmacie, Nov. 1822.

‡ Copaifera Officinalis, Linn.

issues from the tree it is very liquid, and nearly colourless. On being kept, however, it acquires the consistence of oil, and assumes a pale golden colour. Although susceptible of considerable inspissation, it never becomes solid. Its taste is aromatic, acrid, and bitter; and its odour fragrant and peculiar. It is always transparent, whatever be the degree of its consistency.

By distillation with water it affords a very odorous pale coloured essential oil, leaving an insipid resinous substance. The action of sulphuric acid on this balsam destroys its transparency, and gives it a very disagreeable odour.* In water it is quite insoluble; but alcohol, and the expressed and essential oils, dissolve it with facility. It forms white saponaceous compounds with the pure alkalies, soluble in water. The resin, when entirely deprived of the oil, is hard, brittle, transparent, of a greenish brown colour, and without taste or smell. When the resin and oil are mixed in proper proportions, they form a liquid identical with the original fluid balsam. If the balsam copaibæ be triturated with a sixteenth of its weight of magnesia, and suffered to stand, it gradually acquires a solid consistence. The oil, by re-distillation becomes colourless, lighter than water, possessing the odour and taste of the copaibæ, and entirely freed from oxygen, since potassium placed in it, is completely preserved from combustion or oxygenation.

Balsam copaiva is a stimulant diuretic, imparting to the urine a bitter taste and peculiar smell; in large doses it acts pretty powerfully as a cathartic, and in exorbitant doses, it sometimes produces "a sort of vibratory feeling in the brain, or causes a febrile anxiety, with a mental disturbance bordering on insanity."†

* Alibert, Elémens de Thérapeutique, tom. ii. p. 341.

† Dr. J. Armstrong.

The free use of this remedy is sometimes followed by an eruption like the nettle-rash, especially when it disorders the stomach. It has seldom been employed simply with a view to its diuretic operation, although in some diseases of the mucous linings of the urinary and genital organs, it is a remedy of unquestionable utility.

In the cure of gonorrhœa, the reputation of this substance has long been very considerable, and it seems, indeed, to be very well founded. Many practitioners depend almost exclusively on its employment in this disease, and my own experience, independent of the authority of others, leads me to place very great confidence in its powers. Dr. Armstrong, in his work on scarlet fever, makes some excellent observations on the mode of administering this remedy in virulent gonorrhœa. This article, he says, "has been so generally restricted to the advanced stages, that so far as I know, there is only one writer who advises it, and that by a short paragraph, *in the inflammatory state.*" He recommends it as generally a speedy and effectual remedy "in the primary as well as in the last stage of gonorrhœa," and states that he derived his knowledge of the efficacy of its early use in this disease from Dr. Pearson Dawson, "who had prescribed it with great success for more than twelve years, in the very commencement of virulent gonorrhœa."* Dr. Armstrong gives it, at first, in doses of sixty drops, formed into an emulsion with sugar, mucilage, and water, repeated every morning and evening. The dose must sometimes be increased to the amount of three, four, or five

* Dr. Chapman in his Therapeutics recommends precisely the same practice. He seems, however, not to have read what Dr. Armstrong had said on this subject; for he speaks of the practice here recommended as peculiar to himself, and does not refer to the work of Dr. Armstrong.

drachms in twenty-four hours. To be entirely effectual the use of the copaiva should always be continued for a week or ten days after the discharge ceases. When there exists much ardor urinæ, the copaiva may be allowed to act pretty freely on the bowels. To restrain its purgative operation, where this becomes troublesome, some laudanum should be given with it.

The good effects of this remedy will be much promoted by an antiphlogistic regimen, rest, and cleanliness. These remarks on the use of copaiva in gonorrhœa, are drawn from Dr. Armstrong's excellent account of his experience with this remedy. For several years past I have pursued this plan of treatment, and I am fully satisfied that it will in general be found much more effectual, and certainly less apt to produce injurious consequences, than the common practice of employing strong astringent injections. I have, however, frequently employed, conjointly with the copaiva, injections of very weak solutions of sugar of lead, especially towards the end of the disease; and it has appeared to me that the cure has been expedited and confirmed thereby.

In the gonorrhœa of females, the balsam copaiva is less useful than in males. This is easily accounted for, when we advert to the circumstance, that in the latter, the urine, which becomes strongly impregnated with the balsam, passes immediately over the diseased surface of the urethra, and thus acts in a manner like an injection on the affected parts. In the female, however, no such immediate local impression can take place, inasmuch as the vagina, and not the urethra, is the part principally affected. That the urine becomes medicated by the copaiva is beyond a doubt, both from the taste and odour which it acquires in persons who take it; nor do we see any reason to suppose that a

medicated fluid passing along the urethra from the bladder outwards, should not be as effectual, as if it passed from a syringe inwards.

Balsam copaiva has also been recommended as a very useful remedy in chronic inflammation of the bronchia, and similar affections. Dr. Armstrong considers it among the best remedies we possess in affections of this kind. "It seems," he observes, "in many cases, to exert a specific influence over the mucous membrane of the trachea and its branches; it increases the flow of urine; it not unfrequently keeps the bowels regularly open, and sometimes it acts upon the skin, causing an itching or an irruption." I have employed this article in a few cases of what I considered chronic inflammation of the bronchia; but its effects were not such as to induce me to think a great deal of its powers in this way. Dr. Armstrong observes, that the copaiva sometimes produces an itching or eruption of the skin, both of which frequently alleviate the cough very much. This remedy, combined with sulphur, was much employed by Morgagni in chronic pulmonary diseases, and Dr. Armstrong states, that he has often exhibited such a combination with manifest advantage.* This balsam has also been recommended as a useful remedy in chronic inflammation of the mucous membrane of the alimentary canal. In chronic diarrhœa I have known it to produce very excellent effects. When this disease depends on mere chronic inflammation, without ulceration of the mucous membrane of the colon, copaiba administered in conjunction with small doses of opium, may be regarded as among our most useful remedies. When employed in this complaint, the copaiba ought to be given in small doses. Richter recommends a mixture of equal parts

* Armstrong on Pulmonary Consumption, p. 274, 2d edit.

of bals. copaiba, ol. terebinth, and ol. succin. rectificat, as an efficacious remedy for involuntary emission of semen during sleep. Thirty drops of this mixture is to be taken three times daily, and the dose gradually increased until it amounts to sixty drops.

To render it more pleasant, and less apt to offend the stomach, it may be very conveniently formed into a mixture with the yelk of egg, or mucilage and water.*

It is very frequently found in an adulterated state in the shops. M. Bucholz says, that it is impure if if do not dissolve in a mixture of four parts of pure alcohol and one of rectified æther. Rape oil, says Dr. Paris, is often mixed with it, "in which case, if dropped into the water, the drops will not retain their spherical form, as they invariably will, if pure."

Formulæ.

℞.—Bals. copaib. ʒvi.
Vitel. ovor. No. iii.
Syrup Limonis ℥ii.
Aq. fontanæ ℥iv.
Ax. menthæ ℥i.—M. Dose, a table-spoonful, three or four times daily.

℞.—Bals. copaib. ℥ss.
Extract. cicutæ ʒii.
Pulv. rad. rhæi ʒi.
Pulv. g. arab. q. s.—M. Divide into three grain pills. Take from three to six, four times daily.

PIPER CUBEBA.

This plant is a native of Java, the Philippine Islands, of Guinea, and the Isle of France, and furnishes the cubebs of commerce, an article which has lately attracted considerable attention as a remedy in certain

* Bals. copaiv. ℥ss. spt. lavend. compt. spt. nit. dulc. āā ʒii. laud. ʒi. g. arab. ʒii. aq. font. ℥iv.—M. Dose, a table-spoonful morning, noon, and night.

diseases. The cubebs, which are the berries of the plant, are of a light brown colour, wrinkled on the surface, about the size of black pepper, and furnished each with a slender pedicle. According to the analysis of Vauquelin, they contain: 1. A volatile oil, which is nearly solid. 2. Resin resembling that of balsam copaiva. 3. A portion of another and coloured resin. 4. A coloured gummy matter. 5. An extractive principle, similar to that contained in leguminous plants. 6. Saline substances.*

The cubebs are a warm and aromatic stimulant. In some persons they are mildly aperient, but in others they produce a contrary effect. Taken in the dose of from one to two drachms, they are considerably diuretic, giving a deeper tinge and peculiar odour to the urine. Within a few years past this article has been highly recommended by some practitioners, in the cure of gonorrhœa. Mr. Jeffreys, senior surgeon of St. George's and St. James' General Dispensary, London, has lately published the result of his experience with the cubebs in this disease, from which it appears that out of twenty-seven cases which were treated with this remedy, eighteen were cured, six relieved, and three failed.† In only three of the cases cured did the disease continue beyond the twelfth day. The majority of cases were well before the eighth day. Dr. Jeffreys thinks that this remedy is more decidedly beneficial in the more inflammatory form of the disease. He observes, also, that the good effects of the medicine commonly begin to show themselves within forty-eight hours after the exhibition of the first dose; and that in those cases which yield only partially to its influence, the disease is put in such a state as to dispose it to

* Annals of Philosophy, for March, 1822.

† Practical Observations on the use of Cubebs, p. 64.

yield more readily to the balsam copaiva. Several other writers of respectability have published favourable reports of the effects of cubebs in gonorrhœa. I have myself employed it in perhaps a dozen cases; and have found it decidedly beneficial in some instancse. The general result of my experience with it, however, does not lead me to regard it as superior, or even equal, to the pure balsam copaiva administered in large doses.

The cubebs have also been prescribed with advantage in leucorrhœa. Dr. Trail of Liverpool, states that he has employed it in this disease, and that, in every instance, he has found it to mitigate the violence of the complaint, and in several cases to remove it entirely.

The cubebs may be given either in the form of powder or of tincture. The former is given in doses of from ʒi. to ʒiii. two or three times daily. From one to two or three drachms of the tincture* is given three or four times during twenty-four hours.

CHIOCOCCA VEL CAHINCA.—CAHINCA ROOT.

The plant which affords the cahinca root is a native of Brazil, and is said by A. Richard, to be the chiococca racemosa of Linnæus. This root, as it occurs in commerce, consists of cylindrical pieces, from one to three feet in length, of the thickness of a quill, and of a reddish-brown colour. They are composed of a thin whitish bark, covered externally with a brown cuticle, and of an internal ligneous portion, forming

* The tincture may be made according to this formula:
℞.—Bacc. piper. cubeb. ℥iii.
Syiritus vini tenu. O. i.
Digere per dies septem, et cola.

nearly the whole substance of the root. The external or cortical part, is of a resinous character, having a disagreeable, bitter, and somewhat acrid and astringent taste. The internal ligneous portion is entirely tasteless. Mixed with the genuine root other pieces "are sometimes found, derived either from the branches of the stem above ground, or from those which run along the ground and have taken root. They are distinguishable from the true root, by being straighter and more regular, and presenting a medullary canal in their centre. The taste, too, is much weaker, and they appear to be less active."

The medicinal virtues of the root appear to be entirely confined to its cortical portion. Both water and alcohol extract them completely. According to the analysis made by MM. Pelletier and Coventou, the cahinca contains: 1. A crystallizable substance, in which the bitter principle of the root resides. 2. A green fatty matter, of a nauseous odour. 3. A yellow colouring matter; and 4. A coloured viscid substance. The crystallizable substance is said to possess the properties of an acid, and has hence been denominated *cahincic acid* by Pelletier and Caventou. This peculiar substance, which appears to contain all the active properties of the root, "is white, without smell, of a taste at first scarcely perceptible, but afterwards extremely bitter and slightly astringent; of difficult solubility in water, but readily soluble in alcohol; permanent in the air, and unaltered at the temperature of boiling water. It reddens vegetable blues, and unites with alkalies, but does not form crystallizable compounds. The form in which it exists in the root, is thought to be that of a sub-cahincate of lime." (U. States Dispensatory.)

The cahinca root is as yet but little known or employed as a medicine in this country. It possesses

stimulant, diuretic, purgative and emetic powers. It was introduced to the notice of the European profession, in 1826, by M. Langsdorff, Russian Consul at Rio Janeiro, as a most efficacious remedy in dropsy. Since that time several accounts have been published, both in Europe and in this country, of its successful employment in this disease. Its remedial powers, in this respect, have been particularly illustrated by M. Francois of Paris. He has employed it with speedy and complete success in several very severe cases; and he declares his conviction, that it is superior to all other remedies we possess in hydropic affections. When given in full doses, it excites an increased flow of urine, and causes copious discharges from the bowels. I have employed it in two cases of ascites, with highly favourable results. The aqueous extract may be given in the quantity of from six to twenty grains. It may also be conveniently administered in the form of decoction.* The *cahincic acid* has lately been employed, and it is said to be much more certain and uniform in its operation than either the extract decoction, or powdered root.

APIUM PETROSELINUM.

This, the common parsley of the gardens, possesses very considerable diuretic properties, and is much used, as such, in domestic practice. The root has an agreeable sweetish taste, and the whole plant is slightly pungent and aromatic. The root is considerably more diuretic than the other parts of the plant, as I have frequently had occasion to observe in my practice.

* ℞.—Rad. cahincæ ℥ii.
Aq. bullient. ℔iss.—M. Boil down to ℥viii. Of this a tablespoonful is to be taken three or four times daily.

Given in the form of decoction, it seldom fails to produce a very considerable increase of urine. I have employed it very advantageously in suppressions of urine, and particularly in the strangury which sometimes supervenes on the use of cantharides and turpentine. I have also known it to give considerable relief in nephritic affections, attended with painful micturition. I have commonly prescribed it together with the malva rotundifolia, or with water-melon seeds. These additions are especially suitable in cases of strangury. It in general lies easy on the stomach, and is by no means unpleasant to the taste.

DIOSMA CRENATA.—FOLIA.—BUCHU LEAVES.

This plant is a native of the southern extremity of Africa, and is particularly abundant at the Cape of Good Hope. It is a small evergreen shrub, seldom rising above three feet in height, furnished with a number of verticilated branches bearing lanceolate, crenate, and coriaceous leaves, dotted on their under surface. The flowers are large, white, consisting of a five-parted calix and ten unequal petals. The fruit is a stellate capsule, containing a great number of black shining seeds.

The leaves are the only part of the plant used for medicinal purposes. They are from three quarters to an inch in length, about three or four lines broad, eliptical or lanceolate, and very finely notched at the edges. The upper surface is smooth and of a green colour; beneath they are much paler and punctuated. In consistence, they resemble the leaves of the uva ursi. They have a strong, diffusive, and somewhat aromatic odour, and a bitterish and warm taste, analogous to that of mint. According to Cadet de Gassicourt, the buchu

leaves contain 6.65 parts of a light, brownish-yellow oil, 211.7 of gum, 51.7 of extractive, 11. of chlorophylle, and 22.51 of resin. Their virtues are readily and completely extracted both by water and alcohol.

The buchu leaves possess stimulant, diaphoretic, and diuretic properties. Among the natives of the Cape of Good Hope, they have long been esteemed as a remedy of various and valuable powers. Within the last seven or eight years, they have been considerably employed in England and on the continent of Europe, and they have also, recently, attracted some attention in this country.

These leaves have a peculiar and very decided tendency to operate on the urinary organs, producing effects analogous to those caused by the uva ursi. In chronic inflammation of the mucous membrane of the bladder, they have been employed with the happiest effects. In a case of this kind, attended with a very copious discharge of mucus from the bladder, I derived decided advantage from the use of this remedy. It has also been administered with great benefit in chronic nephritic affections, in morbid sensibility and irritation of the neck of the bladder, in disease of the prostrate gland, and in retention or incontinence of urine, "from loss of tone in the parts concerned in the evacuation." From the accounts which have been published, of the effects of this remedy in diseases of this kind, as well as from my own experience, I have been led to regard it as worthy of particular attention in the treatment of urinary affections.

The buchu leaves have also been recommended as an efficacious remedy in chronic rheumatism, in diseases of the skin, and in leucorrhœa. In the latter affection I have employed the saturated tincture, with very evident advantage.

From twenty to forty grains of the powder may be taken three times daily. The infusion prepared of half an ounce of the leaves, with a pint of boiling water, may be administered in doses of from one to two fluid ounces. Of the saturated tincture, I have given a teaspoonful three times daily.

DAUCUS CAROTA.—WILD CARROT.

The wild carrot grows in very great abundance in many parts of the United States. In the vicinity of this city, particularly, it is one of the most common plants. The seeds of this species of carrot have a warm and moderately pungent taste, and a very agreeable aromatic odour. They are considerably diuretic, and are much used by the country people in suppressions of urine and painful micturition. In my own practice I have derived the most unequivocal advantage from an infusion of these seeds in anasarcous swellings of the lower extremities. They have also been employed with success in the other varieties of dropsy. In a consultation letter which I received from the late Dr. Wistar, in the case of the late Judge Yeates of Lancaster, who laboured under hydrothorax, the doctor observes: "The wild carrot seeds, in infusion, have also been sometimes successful in hydrothorax." They hardly ever fail to produce pretty copious diuresis; and an infusion of them may be drunk to almost any extent, without nauseating the stomach.

The common garden carrot is also applicable to useful medicinal purposes. When boiled and beaten into a pulp, it forms an excellent cataplasm to ill-conditioned ulcers. "A marmalade of carrots, on account of their strong antiseptic qualities, has been successfully used for preventing and curing the sea-scurvy.

An infusion of these roots has also been found to afford considerable relief to persons afflicted with the stone and worms, but especially the tape worm. It may be given to the extent of a pint a day."*

This plant is figured in Barton's Med. Bot. vol. i.

ERIGERON HETEROPHYLLUM.

This plant is common to the United States and Europe; and is found in very great abundance in almost every part of this country. It rises to the height of two or three feet; the stems are roundish, striated, pubescent, and about the thickness, below, of a pipe stem, gradually tapering towards the top, where it is divided into numerous spreading branches. The radical leaves are ovate, acute, deeply toothed, and supported by broad winged petioles, half the length of the leaves. The stem leaves are sessile, lanceolate, acute, deeply sinuated or remotely serrate-toothed in the middle. The leaves of the branches are lanceolate, entire, and closely sessile. All the leaves, except those from the root, are ciliated at and near the base. The flowers, borne in terminal, rarely lateral, corymbs, are numerous, "and of the sun-flower shape. The disk or centre is bright yellow," and the rayflorets capillary, numerous, white, blue, and sometimes pale purple. It flowers from August to late in the fall.†

This plant is well entitled to attention for its powers as a diuretic and antilithic. In this city it has been a good deal employed, within a few years past, in nephritic and gravelly affections. Dr. Physic employed it in a case of dysury, attended with great pain and irritability of the bladder, with much relief to the

* Thacher's Dispensatory.

† Barton's Vegetable Mat. Med. vol. i. p. 232.

patient. Dr. Wistar, in a letter to me, some years ago, says, "I once attended a gentleman who suffered with gout and hydrothorax; the squill produced great disturbance and pain of the stomach, and thus did more harm than good. This gentleman was greatly relieved by the infusion of scabius, which he took very freely." In another letter already referred to in the preceding article, he says, "The infusion of scabius, taken plentifully, once gave complete relief in a similar case, (hydrothorax, with gout,) but it has sometimes failed."

I have been much in the habit of prescribing this plant in gravelly and hydropic diseases. It has seldom failed to produce pretty copious diuresis in my practice, and the advantages derived from it have been such as to give me a very high opinion of its remediate powers. It will, in general, lie easy on the stomach, and has no tendency to weaken the digestive powers. Some of my patients have even found an increase of appetite from its use, and I do not recollect an instance where it became injurious to the stomach. "My own experience," says Dr. W. P. C. Barton, "with this plant, enables me to bear testimony to its diuretic virtues. If it be not among the most powerful medicines of this class, it has the estimable property of being innocent to the stomach. I have used a strong decoction of this plant in a case of nephritis, at the Naval Hospital, and my success in this instance far exceeded my sanguine expectations, and emboldens me, with some degree of confidence, to recommend the scabius in similar cases."*

The plant should be collected when in flower. The best way of using it is in decoction, of which a pint or two may be taken in twenty-four hours. For excellent

* Vegetable Mat. Med. vol. i. p. 236.

figures and descriptions of the Erigeron Heterophyllum and E. Philadelphicum, see Dr. W. P. C. Barton's Vegetable Mat. Med. Vol. i.

CHIMAPHILA UMBELLATA.—WINTER GREEN.—PIPSISSEWA.

This plant is common throughout every part of the United States, growing in dry shady woods, and preserving its verdure during the winter season. The root is perennial, creeping, and of a yellowish colour. The stems are semi-procumbent, hard and woody at the base, from six to eight inches high, "and marked with the scars of the former leaves." The leaves generally grow in whorls, opposite or scattered, subsessile, lanceolate, somewhat wedge-shaped, acutely serrate, decurrent on the petiole, coriaceous, and of a deep shining green colour. The flowers appear in June and July, in a sort of umbel, variegated with purple and white. When chewed it imparts an aromatic pungency to the taste, and when bruised it has a strong and unpleasant smell.

This vegetable has been but recently introduced into regular practice, and from the accounts which have already been published of its efficacy in various diseases, it would appear to be entitled to much credit. Schœf speaks of it as "astringent and co-roborant," but says nothing of its diuretic qualities. During the American revolutionary war, it was employed as a tonic remedy in typhous fever. It was formerly a good deal used in some parts of the United States as a domestic remedy for rheumatism. Of late it has been introduced to the particular notice of the profession as a valuable diuretic medicine. Dr. Sommerville, of the British army, deputy inspector of the military hospitals in Canada, in a paper published a few years

ago, adduces some interesting facts demonstrative of its good effects in dropsical diseases. He states that the diuretic effects of a strong infusion of this herb were always very considerable, and that one patient to whom he gave it experienced an agreeable sensation in the stomach soon after taking the medicine, and a very considerable increase of appetite. He states, also, that Sir Walter Farquhar employed this remedy in the case of a lady labouring under abdominal dropsy, in which the diuretic effects of the medicine were very strikingly manifested. Dr. Marcet, in consequence of Dr. Sommerville's paper, tried the extract of this plant at Guy's Hospital, in doses of fifteen grains, with manifest advantage. Other writers speak favourably of this remedy as a diuretic. In my own practice I have employed it in one case only; and, although it evidently produced a considerable increase of urine, it did not afford any decided advantage.

The bruised leaves will sometimes produce redness, vesication, and desquamation, when applied to the skin.*

The pipsissewa has also been successfully employed in the cure of intermittents. Dr. Mitchell† relates several cases of this complaint which were effectually removed by the use of this remedy. It has also been recommended as an excellent antilithic. The late Dr. Barton says, that "all his trials and inquiries respecting this plant have convinced him that it is an important antilithic, not less so than the uva ursi." I have used it in some cases of this kind, but did not derive any particular advantage from it. I suspect that its antilithic powers are entitled to very little attention.

* Barton's Collection towards an Essay on the Materia Medica, third edit., part ii. p. 21.

† Inaugural Dissertation on the Medical Properties of the Pyrola Umbellata., Phila. 1803.

This vegetable has of late been a good deal employed in cancerous affections, and some very remarkable cases are published in testimony of its good effects in this way. Although I am perfectly satisfied of its total inutility in cases of this kind, I have, nevertheless, in several instances known its internal employment to produce excellent effects, in the cure of ill-conditioned ulcers, and venereal eruptions. It may be given in the form of a strong decoction, to the extent of a pint in twenty-four hours. The watery extract of this plant has also been employed to the extent of five scruples in twenty-four hours.

SUB-CARBONAS POTASSÆ.*—KALI PRÆPERATUM.

Both the carbonate and sub-carbonate of potash, occasionally manifest considerable diuretic powers. Upon the subject of the modus operandi of the saline diuretics, Dr. Cullen observes, "With respect to the whole of them, it is to be observed in the first place, that as it seems to be determined, by the nature of the animal economy, that all saline substances received into the mass of blood should soon pass out again by the excretions, and particularly by that of urine, it will be obvious that, as all saline matters are more or less stimulant, they must all of them, in passing by the kidneys, be more or less diuretic." From the reappearance of these salts in the urine, after having been taken into the stomach, there can hardly be a doubt of the correctness of this explanation of their modus operandi in producing diuresis. This is rendered still more probable by the fact, that when they prove laxative, and are thereby prevented from being absorbed, by the

* The chemical history of this article has already been given in the chapter of Antacids.

rapidity with which they are carried out of the body through the alimentary canal, they produce little or no diuretic effect. To obtain the full diuretic operation of the neutral salts, it is therefore necessary to exhibit them in such small doses as to prevent them from acting on the bowels as a purgative, and they must be repeated at short and regular intervals.

The diuretic effect of the fixed alkali is said to be enhanced by combining it with bitters, as was the custom of Sir John Pringle. Dr. Cullen observes, that by giving the alkali in this way, he "commonly found it to prove diuretic." He also adds, that "alkalies may be often prevented, by purging, from reaching the kidneys; and that their diuretic effect may be often more certainly secured by giving an opiate at the same time." Dr. Mead was in the habit of using such a combination, and he represents the practice as a very useful one. Formerly, the carbonate of potash was much employed in the cure of dropsy. We find it recommended in the works of Dr. Ettmuller, Willis, Sydenham, Monro, Mead, Mascagni, and other writers of the early and middle periods of the last century, as an efficacious remedy in this disease. Monro speaks particularly in praise of it, when given in combination with rhubarb. "In the cure of those dropsical patients whose constitutions are so weak that they cannot bear purging, it is to be attempted," says Sydenham, "by diuretics: those are the best which are made of the lixivial salts."

I have employed the carbonate of potash in combination with squills, in persons labouring under hydrothorax, attended with indigestion and acid in the stomach; it is obvious that in cases of this kind such a combination is especially indicated, and in a few instances in which I have tried it, I have had much

reason to be pleased with its effects. Dose from gr. x. to ʒss.

ACETAS POTASSÆ.—SAL DIURETICUS.—TERRA FOLIATA TARTARI.

This salt is obtained in foliated laminar masses; it is extremely deliquescent, and possesses a sharp and pungent taste. One ounce of water at 60° dissolves four hundred and four grains. Four parts of alcohol by weight, will dissolve one part of the salt. It consists of forty-five parts of potass and forty-eight of acetic acid. "It is decomposed by tamarinds and most sub-acid fruits; by almost every acid, as well as every variety of neutral salt, whether alkaline, acid, or or metallic."

This article was formerly much employed as a diuretic; though at present its reputation as such does not appear to be very great. In combination with other diuretics it is, however, still frequently prescribed; and I have myself, in some instances, used it with evident advantage in the way recommended by Dr. Maclean in his work on hydrothorax.* Alibert, however, speaks of it as a very efficacious diuretic in dropsy. "This remedy," says he, "is so well suited to the sensibility of the absorbents that its administration is frequently followed by very salutary effects." He mentions a case of anasarca that was effectually cured by this remedy alone, after many other diuretics had been long tried in vain.† He observes that he

* ℞.—Bacc. juniper. contus. ℥ii. infunde in aq. ferv. ℔ii. per horas aliquot. dein cola. colatur. adde kali acetat. ℥ss. spir. junip. e. ℥ii.—M. This is to be used in draughts of about a gill, three times a day, as an adjuvant to a more active diuretic mixture composed of nitre, squills, and calomel.

† Elémens de Thérapeutique, vol. i. p. 327.

might cite many other cases treated in the hospital Saint Louis, which show "the remediate powers of this valuable medicine."

It cannot be given in powder or pills on account of its extreme deliquescence. The dose is from ℈i. to ʒi.; in the dose of from ʒiii. to ʒiv. it proves mildly cathartic.

NITRAS POTASSÆ.—NITRE.—SALTPETRE.

In another place the chemical history of this salt is fully detailed, together with the various medicinal powers which it possesses independently of its diuretic operation. As a diuretic, nitre is not very powerful. It may, nevertheless, be advantageously employed, either alone, or conjointly with other diuretics, in dropsical affections; particularly in cases attended by much arterial excitement, where it produces the twofold advantage of diuresis and a reduction of the action of the heart and arteries. Alibert observes, that when given with a view to its diuretic effects, it should be administered in copious draughts of some mild liquid. When exhibited in this way, it is much more active as a diuretic, than when given in substance. The dose, as a diuretic, is from gr. x. to gr. xv. In exorbitant doses, it excites vomiting, spasms, convulsions, bloody stools, and even death.

SUPER-TARTRAS POTASSÆ.—CREAM OF TARTAR.

I shall not repeat here what I have already said respecting the chemical character of this remedy. Possessing both hydragogue and diuretic properties, the cream of tartar would seem to be peculiarly suited to the treatment of hydropic diseases. By many,

indeed, it is considered as one of our most efficacious remedies in such affections. When given in a large dose, it acts upon the bowels, producing copious watery stools; and, at the same time, excites the kidneys to an abundant secretion of urine. By this combined operation upon the kidneys and bowels, the remedy often evinces a powerful control over dropsical accumulations. To increase its diuretic effects, it may be advantageously given in union with digitalis, as was practised by Dr. Ferriar. This accomplished writer observes, in those cases in which he employed the cream of tartar successfully, it operated very early, "producing an increased flow of urine within twenty-four hours. It commonly diminishes the swellings very speedily, and for the greater part, lessens the patient's size more quickly than the increase of urine would lead us to expect." It is quite evident, indeed, that the power of this remedy, in evacuating dropsical accumulations, does not depend exclusively on its property of exciting the renal emunctories, but in a considerable degree also, on its powers to increase the action of the intestinal exhalents. Cream of tartar is apt, by frequent repetition, to weaken the digestive organs; to obviate this effect, cordials and tonics ought to be employed along with it. In doses of four to six drachms, it acts as a hydragogue: in smaller ones, it acts simply as a diuretic. To increase its diuretic operation, it should be given in solution. One drachm of the cream of tartar to a pint of boiling water, and flavoured with lemon peel and sugar, forms an excellent and cooling diuretic drink.

SPIRITUS ÆTHERIS NITROSI.

The dulcified spirits of nitre is a colourless fluid, extremely fragrant, and of a pungent acidulous taste.

It consists of a portion of nitric æther and nitric acid in union with alcohol. "With the green sulphate of iron it strikes a deep olive colour, and with the tinctures of guaiacum it produces a green or blue coagulum."

Though by no means a very certain or active diuretic, the sweet spirits of nitre may sometimes be administered with much advantage, as an auxiliary remedy in dropsy.*

It is not, however, often employed in dropsy, and is certainly, perhaps, never to be depended on as a principal remedy in this disease. In the diseases of children, it is a very common remedy, and as it possesses considerable diaphoretic powers, it may be very usefully employed, not only in diseases of the urinary organs, but also as a general remedy in febrile cases. As an antiphlogistic in febrile diseases attended with a dry and hot skin, the sweet spirits of nitre often produces very excellent effects. It appears, indeed, to produce sedative effects, independent of the evacuations which it excites. When given in large and repeated doses, it seldom fails to reduce the action of the heart and arteries, and to moderate the febrile heat of the skin. From its pleasant taste it can in general be easily given to children. When administered as a diuretic it should be given in large doses, not less than three drachms at once to an adult. In doses of ten to thirty drops it acts as a gentle diaphoretic.

TINCTURA MURIATIS FERRI.

The muriated tincture of iron possesses considerable diuretic powers. It has been especially recom-

* Dr. Paris gives this formula, as a highly stimulating diuretic:

℞.—Tinct. lyttæ M. x. spirit. ætheris nitrici ʒi. misturæ camphoræ ʒxii. syrup. zingiberis ʒi. Fiat haustus, ter in die sumendus.

mended in suppressions of urine depending on spasm. Given in doses of ten or twelve drops every ten or fifteen minutes, it sometimes procures prompt relief in the most obstinate cases of this kind. "To the good effects of this medicine," says Dr. Thomas, "I can myself bear testimony, having tried it in some cases of spasmodic suppression with success. After six doses the urine usually flows easily." In a case of chronic dysury, attended frequently with discharges of bloody urine, and a constant feeling of uneasiness or soreness about the neck of the bladder, I prescribed this remedy with decided and permanent advantage, after a very great variety of medicines and modes of treatment had been employed with but temporary benefit. In chronic inflammation of the mucous membrane of the bladder, this tincture has been used with decided benefit. I have employed it with unequivocal advantage in several cases of chronic catarrh of the bladder. In cases of this kind, it should be given with a considerable quantity of some mucilaginous fluid, such as flaxseed tea, infusion of slippery elm bark, &c. In a letter which I lately received from my friend Dr. Francis of New York, he observes, "the muriated tincture of iron is acknowledged by all as a valuable diuretic. But in cases where there is much local irritation, as in some affections of the prostrate gland, and in disorders about the neck of the bladder, its action is, at times, excessively painful. Under such circumstances," he continues, "I have found the muriated tincture of gold preferable. Indeed the gold deserves far more notice as a diuretic than as an antivenereal remedy."

CHAPTER XV.

IODIUM.—IODINE.

This substance was discovered in 1812, by M. Courtois, while engaged in the manufacture of soda from sea weeds. It exists naturally in various marine productions, particularly in the fuci, the sponge, certain polypi, and the oyster. It may, also, be obtained in minute quantities from sea water and from certain salt springs. Dr. William Usher discovered it in the water of the Congress Spring at Saratoga; and small quantities have been obtained from the Kenhawa saline waters. "When in solution, iodine always occurs in union with hydrogen and a base, forming a *hydriodate*. In sea weeds it appears to exist in the state of a hydriodate of potassa, and it is from the ashes of these that the iodine is most readily obtained."

Iodine consists of soft, friable, opake crystalline scales, of a dark colour, and somewhat metallic lustre. It has a strong odour analogous to that of chlorine, and a very acrid taste. It melts at a temperature of 225°, and boils at 347°. When exposed to a moderate degree of heat, it is speedily converted into a vapour, of a rich purple colour. Iodine dissolves in 7000 times its weight of water, and in a much smaller quantity of alcohol or æther. The alcoholic solution is acrid, and of a fine dark red colour; with æther it forms a deep brown solution. Iodine combines with nearly all the metallic, and with many of the non-metallic substances,

forming *iodides*. With oxygen it forms *iodous* and *iodic acid;* and with hydrogen, a gaseous compound called *hydriodic acid.*

Iodine may be readily detected, by starch, with which it forms an insoluble compound of a deep blue colour. This test is so delicate, that "it will indicate the presence of iodine contained in 450,000 times its weight of water. In order that this test may succeed, the iodine must be in a free state, and the solutions cold. To render it free, when it happens to be in saline combination, a little nitric acid must be added to the solution suspected to contain it.

Iodine is a powerful and valuable medicinal agent. Although very extensive in its influence on the animal system, its action appears to be especially directed on the *absorbent* or *lymphatic* system. Coindet says, that his experience with this article, upon more than two hundred patients, has convinced him, that "it is one of the most energetic excitants of the lymphatic system with which we are acquainted." It operates also as a general stimulant on the sanguiferous system, and manifestly influences, in no inconsiderable degree, the action of the *secernants*, "or those vessels whose function it is to deposit and reproduce." Its action on the heart and arteries, however, appears to be very much under the influence of constitutional habit or physical temperament. In nervous and irritable subjects, even moderate doses generally produce considerable arterial excitement; whilst in lymphatic and torpid habits, ordinary doses rarely produce this effect. Administered in minute doses, iodine frequently manifests decided *tonic* powers, giving tone to the stomach and exciting the appetite. It is also said to possess considerable *emmenagogue* powers. Coindet declares, that "if given in a certain dose and continued for some time, it is one

of the most active emmenagogues we possess." Its powers in this respect, however, are by no means such as is asserted by Coindet. It may indeed, sometimes, restore the suppressed menstrual secretion, but its effects, in this way, are uncertain, and doubtless depend more on its general influence on the system, than on any direct or specific tendency to operate on the uterus. Brera observes, "that like mercury, iodine maintains a permanent action on the system, for a considerable time after its administration has been suspended. It powerfully excites the nervous system, accelerates the action of the heart and arteries, and restores the healthy functions of the sanguiferous and glandular systems. It improves the appetite, fattens the lean, and emaciates the corpulent, and directing its action, particularly on the thyroid gland and *uterus*, it removes the enlargements of the former, and promotes scanty, and lessens excessive menstruation."

Although an article of valuable remedial powers, and under judicious management, generally free from all unpleasant effects, yet like all other energetic medicinal agents, iodine, when administered in excessive doses, and in certain physiological states of the system, is apt to produce very distressing and alarming consequences. The effects which often result from its injudicious use are: "highly accelerated pulse, palpitation, frequent dry cough, insomnia, great loss of strength and emaciation, swelling and tremors of the lower extremities, wasting of the mammæ, and a continued and annoying increase of appetite." (Coindet.) Certain individuals can never take it in doses sufficient to affect the constitution, without very unpleasant consequences; such as "dimness of vision, indistinct hearing, fallacious touch, palpitation and various other nervous symptoms." (Gairdner.) Dr. Gairdner states that in a case in

which the use of this remedy was pushed too far it gave rise to "gnawing pains at the stomach, great anxiety and oppression, emaciation, frequent vomiting, severe pains in the abdomen, with the most distressing thirst, and finally violent cramps and convulsive action of the muscles of the arms, back, and legs, without scarcely any intermission."

In some individuals iodine produces a peculiar itching or tingling sensation over the whole surface of the body; and its external application, in the form of an ointment, is said sometimes to cause a "total loss of sensation in that part of the integuments on which it is rubbed, extending itself occasionally to those parts which are supplied by the same nerves of sensation." The tendency of iodine, when its use is long continued, to cause wasting of the mammæ has already been mentioned. I have witnessed one remarkable instance of this kind. Cases have also been related in which the protracted employment of this remedy was attended with the almost entire, and even total absorption of the testicles.

Although violent and dangerous effects may result from the careless or improper use of this article, it is, nevertheless, a remedy of important medicinal powers, and, under due circumspection and judicious management, may be employed without the least risk of dangerous consequences. Dr. Manson asserts that he administered it "in several hundred cases, without ever having cause for disapproving of it;" and Dr. Roots, an English physician, says, that he used it in more than three hundred cases, without any injurious effects. We may also refer to the experience of Drs. Coindet, Gairdner, Baron, Decarro, and Brera, all of whom employed this remedy extensively, without having, in any instance, witnessed injurious consequences

to result from its operation. M. Zink states, "that as soon as the tincture of iodine became known as a cure for goitre, it was used to an enormous extent at Lausanne; it was pushed so far, that I may say, without exaggeration, the tincture of iodine bottle occupied the place of the *bonbonniere*, for I have seen persons carrying it about with them. With few exceptions it was in general use; some took it to prevent this dreadful affection. This medicine was procured at the shops without physician's prescription. This mania for iodine had some victims; but in general, much less mischief was done than might be expected from the incautious manner in which the tincture was used." (Magendie's Formulary, p. 62, sixth ed.)

Iodine was first employed as a remedial agent, in the year 1819, by Dr. Coindet, of Geneva. Reflecting on the fact, that *goitre* had frequently disappeared under the internal employment of burnt sponge, and that the *fucus vesiculosus* had recently been used with equal benefit in this disease; and knowing that the latter vegetable contains a considerable portion of iodine, he concluded, that as sponge was also a marine plant, iodine was, probably, the active remedial principle in both these marine productions, and that it might be very efficiently employed in its pure and separate state. This conjecture was soon fully confirmed by experience; and this substance is now universally acknowledged as a remedy of extraordinary efficacy in goitre. It has seldom been employed, even in the most inveterate and violent cases of this malady, without manifest benefit; and in a vast majority of the instances in which it has been used, the disease has gradually and completely disappeared under its influence. In scrofula, also, iodine is a remedy of valuable powers. It is particularly beneficial in dis-

cussing or removing scrofulous indurations. For this purpose, it is generally employed externally, by rubbing the ointment several times daily into the enlarged lymphatic gland. In enlargement of the mammary glands of a scrofulous character, iodine has been used with the happiest effect. Dr. Gairdner states, that a case of strumous enlargement of the right breast, which had existed for two years, was entirely cured in six weeks, by rubbing the ungt. potass. hydriod. into the axilla of the affected side every night on going to bed. Dr. Coindet also asserts, that he has repeatedly resorted to this remedy with entire success in "indolent enlargement of the glands of the breast, consequent upon delivery." Bayle (Rev. Medicale, Aug. 1828) relates several cases of enlarged mammæ which yielded to the internal and external employment of iodine; one of these cases was of eighteen years standing.

In enlargements of the liver and spleen, iodine has shown itself a valuable remedy. Dr. Thompson, of Louisiana, employed it with complete success in six cases of indurated enlargement of the spleen; and Dr. Cartwright, of Natchez, asserts, that he used it in cases of this kind with the happiest effect. I have myself resorted to the use of this remedy in two inveterate cases of indurated and enlarged spleen with entire success. This remedy has, moreover, been successfully used in chronic enlargement of the testicles. Dr. Brown, of Ohio, has related a severe and obstinate case of this kind, which yielded entirely to the influence of the iodine. (Western Jour. Med. and Phys. Sciences, No. 3.)

Dr. Gairdner states, that he has employed this remedy with very decided benefit in marasmus or strumous disease of the mesenteric glands. M. Calloway, also, resorted to it in this affection, with the most

satisfactory results. It is asserted by some writers, that iodine has been employed with entire success in *scirrhous cancers.* That it has been used with unequivocal advantage in this formidable affection, is too well attested to admit of doubt. Graefe, of Berlin, has related a case of *cutaneous cancer* on the left breast in a female fifty years of age, which yielded entirely to frictions with the ungt. potass. hydriod. (Graefe and Walther's Jour.) In *carcinoma uteri*, also, very decided benefit has been obtained from the use of this remedy. Hufeland employed it in cases of this kind with great advantage; and he states, that Dr. Hannemann prescribed it in a case, which had advanced to the last stage, and in which there was a communication between the vagina and cavity of the abdomen, with surprising advantage.

In certain affections of the nervous system, very decided benefit has been derived from the use of this article. Dr. Manson informs us, that he has employed it in all the different varieties of palsy with the most satisfactory results. Dr. Brown, of Ohio, used it with complete success in a case of paraplegia. It has also been successfully admininistered in *chorea;* but its efficacy in this affection does not appear to be remarkable. Out of seventy-two cases, in which Dr. Manson employed the remedy, eleven only were cured.

Iodine appears to be entitled to considerable attention as a remedy in gonorrhœa. M. Richond, in a memoir he has published on this subject, mentions a number of cases, which yielded to the influence of this remedy, after various other approved means had been ineffectually resorted to. Dr. Bell, of Philadelphia, has also used it in this complaint with satisfactory results. The iodine should not be resorted to, until the inflammatory symptoms of the disease are sub-

dued. This remedy has likewise been successfully used in venereal bubo. M. Richond has related a number of cases, in which the iodine was employed with great advantage; and Drs. Cartwright and Bell prescribed it in cases of this kind, with very favourable results. Iodine would seem, moreover, to be beneficial in syphilis. Dr. Bell states, that "in ulcers of the mouth and throat, whether consecutive of syphilis, or proceeding from other causes, I have derived the very best effects from iodine."*

Both in amenorrhœa, and dysmenorrhœa, iodine has been administered with unequivocal benefit. It has also been employed, with complete success, in chlorosis. Coindet informs us, that in the latter affection, he has prescribed this article with the happiest effect; and Dr. Bell administered it in amenorrhœa, with entire success. Magendie states (*Formulary*) that he prescribed the iodine in a case of supposed amenorrhœa; in about three weeks abortion took place. In leucorrhœa, very decided benefit has been obtained from this remedy. Dr. Goeden used it with success in two cases of six years duration;† and Dr. Bell asserts, that he administered it in several cases of this complaint, with "speedy and permanently beneficial effects." Dr. Girnelle, also, declares that he has employed this article with peculiar satisfaction in inveterate cases of the malady. I have myself prescribed the iodine in a number of cases of leucorrhœa; and although in the majority of instances it failed to do much good, several cases of long standing were entirely cured by its use. In a case which occurred to me about six months ago, and which had continued in

* Dr. Bell's paper on Iodine. North Amer. Med. and Surg. Jour. No. 12.

† North. Am. Med. & Surg. Jour. vol. ii. p. 412.

an aggravated form, for about ten years, the iodine has effected a cure, which I have reason to think will be permanent. The use of the iodine was continued for nearly three months.

Decided benefit has been derived from this remedy in hydropic affections. Dr. Baron, in his work on "Tuberculous Diseases," mentions a case of ovarian dropsy, in which great advantage was obtained from the use of iodine; and Dr. Gairdner declares that he witnessed an instance of this disease, which was completely cured by this remedy, after the tumour had been twice tapped. In a case of this affection which came under my care, about two years ago, frictions over the ovarian tumour with ungt. potass. hydriod., caused a very considerable reduction of its size. Iodine has also been used with much advantage in certain forms of cutaneous disease. Dr. Goeden used it with success in *tinea capitis;* and Dr. Mandon knew it to cure a case of *leprosy*. The iodide of sulphur is said to be particularly efficacious in affections of this kind. Dr. Biett employed it in psoriasis, tinea favosa, and *acne rosacea*, with remarkable success. He employed it externally in the form of an ointment, composed of one part of the iodide of sulphur, with sixteen, twenty, or twenty-five parts of lard.

Iodine is said to have manifested very decided remedial powers in *phthisis pulmonalis*. Dr. Baron mentions a case, in which the existence of tubercles in the lungs could not be doubted. Under the use of iodine, the consumptive symptoms gradually subsided, until the patient's health was completely restored. Dr. Gairdner also employed this remedy in phthisis pulmonalis, and in several cases, its effects were decidedly beneficial. It must be observed, however, that it is only in the early or incipient stage of the disease, that

any advantage can be expected from the use of this remedy; and even when thus early resorted to, the chances of success must be regarded as very limited. M. Fermon employed the following mixture in a case of phthisis, with great benefit.* The *vapour* of iodine has also been employed in the treatment of this disease. Dr. Benton says that he has derived unequivocal advantage from the inhalation of iodine vapours in phthisis. The mode of using it is as follows: "In a bottle with two tubular openings, put some diluted sulphuric acid, and project on it, daily, about half a grain of hydriodate of potassa. The iodine is immediately disengaged in the form of vapour, and this may be inhaled by the patient through one of the tubes of the bottle. The inhalation must be repeated from four to ten times daily, the duration of each being from four to five minutes." The usefulness of iodine in scrofulous ophthalmia, has already been noticed. It would seem, also, worthy of attention, as a remedy in iritis, and in opacities of the cornea. Drs. Manson and Cartwright employed it in both these affections with great success. In scrofulous ophthalmia attended with opacity of the cornea, Dr. Cartwright applied the ungt. potass. hydriod. twice or thrice daily to the eyelids and adjacent parts, exhibiting at the same time, the tincture of iodine internally. Great care should be taken that the ointment do not come in contact with the conjunctiva, as it would inevitably produce violent and painful irritation. Dr. Gendrin, of Paris, declares that he has used the iodine with extraordinary benefit in *gout* or *arthritis*. He found it especially efficacious in reducing the chronic enlargements of the joints, as well as articular concretions. He applied the iodine ointment to

* ℞.—Lettuce water, ℥iv. solution of hydriodate of potassa, gtt. xv. medicinal Prussic acid, gtt. x. to xv. syrup of marshmallows, ℥i.—Mix. Take a tea-spoonful every hour.

the affected joints by frictions, and, at the same time, exhibited the tincture internally. He asserts, that in every case of gout in which this treatment was adopted, the patients were cured in a few days, or their condition rapidly meliorated.* Dr. Choate, of Salem, resorted to this mode of treatment in a very severe case of this affection, and the result was highly satisfactory.† Dr. Manson relates several cases of *white-swelling*, or *fungus articuli*, in which the use of iodine was attended with the happiest effect. He used it both externally in the form of a liniment, and internally. He employed it with success also, in a case of dropsy of the knee-joint. M. Zink has given an account of two cases of white-swelling, both of which were cured with the iodine. (Magendie's Formulary). We may also cite the testimony of M. Lugal and of M. Bayle in favour of the excellent effects of this remedy in articular affections of this kind. It has been found equally beneficial in *hip-joint disease.* Dr. Manson used it in four cases, two of which were entirely cured, and the other greatly relieved. There are a great many diseases, besides those already mentioned, in which iodine has been found useful. Dr. Manson prescribed it in *deafness*, depending on chronic inflammation, and thickening of the lining-membrane of the eustachian tube, with great success. He cured also, several cases of *dysphagia* with this remedy, and for the cure of *fistula lacrymalis* he considers it superior to any other remedy we possess. In *spinal distortions* he says it manifests excellent remedial powers. By keeping his patients at rest in a recumbent posture, and employing the iodine both internally and externally, by frictions over the affected part, and keeping the bowels constantly open by gentle laxatives, the cure was generally

* See Amer. Med. Recorder, No. xlvi. 1829.

† Boston Med. and Surg. Jour. No. 33.

effected in the course of two or three months. This remedy has, likewise, been successfully used in *circocele*. Dr. Cartwright mentions four cases of this affection which yielded to the influence of iodine. Magendie states, that he has known inveterate cases of ulceration of the tongue and pharynx, cured by the use of this remedy. Dr. Oliver, of Salem, employed it with success in several cases of *angina pectoris*. In polysarchia or excessive corpulency, great benefit was obtained from the use of iodine, by Dr. Graefe, of Berlin. Iodine has been recommended in *enlargement of the prostrate gland*, and it is highly probable that much benefit might be derived from it in this distressing affection. I have, in two instances, used it with almost complete success, in chronic enlargement of the tonsils. Advantage might, perhaps, be derived from the use of iodine, in ozena, fungus hæmatodes, indolent piles, cataract, fungus of the testicle, elephantiasis, osteo sarcoma, &c.*

PHARMACEUTICAL PREPARATIONS.

Tincture.

℞.—Iodine ℥ss.
Spirit. vini. rectificat. ℥i.

Solution of Hydriodate of Potass.

℞.—Potass. hydriod. ℈ii.
Aq. fontanæ. ℥i.—M. ft. solut. To form the *Ioduretted solution*, ten grains of iodine must be added to the solution of hydriod. of potass.

Ointment of Hydriodate of Potass.

℞.—Potass. hydriod. ℥ss.
Adeps suillæ ℥i.—M. ft. ungt.

Iodic Ointment.

℞.—Iodine ℥ss.
Adeps suillæ ℥i.—M. ft. ungt.

Iodic Liniment.

℞.—Liniment sapon. comp. ℥i.
Tinct. iodin. ℥i.—M. ft. liniment.

* An Essay on the History, Preparation, and Therapeutic uses of Iodine. By Samuel J. Hobson, M. D. I have resorted freely to this excellent Essay, in drawing up the present chapter.

Iodic Pills.

℞.—Iodine gr. x.
Micæ panis. gr. v.—M. Divide into twenty pills, one to be taken twice or thrice daily.

The dose of the *tincture* of iodine and of the solution of *hydriodate of potass* is from six to ten drops, three times daily, and gradually increased, until it amounts to twenty-five or thirty drops. In some instances, indeed, it may be carried to a much greater extent, without producing any unpleasant effects on the stomach or general system. It may generally be safely increased by one drop per diem. Its effects should, however, always be carefully watched; for in some habits, even moderate doses, soon give rise to very violent symptoms. The *solut. potass. hydriod.* is usually much less apt to disagree with the stomach than the tincture of iodine.

The *iodides of mercury* have recently been strongly recommended, and they are doubtless very excellent iodec preparations. They may be administered according to the following formula:

Tincture of Deuto-Iodide of Mercury.

℞.—Deuto-iodide of mercury gr. xvi.
Spirit. vini rectificat. ʒxiiiss.—M. Dose, from ten to twenty drops, in a glass full of distilled water, as common water readily decomposes it.

Ointment of Deuto-Iodide of Mercury.

℞.—Deuto-iodide merc. gr. xvi.
Adeps suillæ. ʒxiiiss.—M. Highly recommended in the treatment of old and obstinate venereal ulcers. The proto-iodide may be used instead of the deuto-iodide of mercury.

Pills of Deuto-Iodide of Mercury.

℞.—Deuto-iodide merc. gr. i.
Extract of juniper gr. x.
Liquorice powder q. s.—M. Divide into eight pills. Two to be taken at first, morning and evening; increasing the dose subsequently to four.

The *ioduret of sulphur* made into an ointment with lard, forms an excellent remedy for chronic cutaneous affections.

CHAPTER XVI.

III. *Medicines that Alter the State of the Urinary Secretion.*

LITHONTRIPTICS, OR ANTILITHICS.

These are medicines capable of correcting the lithic diathesis, or of dissolving urinary calculi. The urine, even in a state of health, is by no means a simple homogeneous fluid. It contains various substances, in such proportion as to be held in permanent solution. Some of these are liable, from particular causes, to be augmented beyond the proportion which the urine is capable of holding in solution, and they are therefore deposited, creating urinary sediments, gravel, and by further accretion, calculi. A disposition in the system to form such an excess of urinary sediments, is denominated the lithic diathesis, and constitutes a very important object of medical attention. It appears from the researches of chemists, that these urinary depositions are of very various, and even opposite characters, as they occur in different individuals, or in the same individual, at different times and under different circumstances of health, diet, exercise, drinks, &c. All the varieties of urinary deposits described by authors may, however, be regarded as composed of the four following elementary substances. 1. The lithic acid and its compounds. 2. The oxalate of lime. 3. The cystic oxide. 4. The earthy phos-

phates.* Almost all the pulverulent and amosphous sediments consist either of the lithic acids and its compounds, or of the earthy phosphates. The yellowish, or nut-brown, reddish brown or lateritious, or pink sediments are of the former kind. The white precipitate consists of the latter substance. The particular state of the system which favours the formation of the lithic acid or lithates, is called the lithic acid diathesis, and that which gives rise to the phosphates, the phosphatic diathesis. What the essential characters of these diatheses are, it would be in vain to inquire. Observation and experience, however, have given us some information with regard to the causes which favour their rise. Thus, it appears, that an excess of lithic acid is especially favoured by whatever tends to weaken the digestive organs; and especially by those causes, either dietetic or otherwise, which produce acidity in the primæ viæ. It is on this account that persons who live chiefly on vegetable food, are most subject to lithic acid sediments in the urine. The circumstances which appear to favour the formation of phosphatic diathesis, are, injuries done to the back, and whatever produces a nervous state of the system, as fear and mental anxiety, and also, the long use of alkaline remedies.† With regard to the

* Prout on Calculous Affections, p. 110.

† "A deposition of the earthy phosphates from the urine has been long observed to be attended by very distressing symptoms, though no one seems hitherto to have generalized them. They consist in great irritability of the system, and derangement of the chylopoietic viscera in general; such as flatulence and nausea, obstinate costiveness, or peculiarly debilitating diarrhœa, or both, frequently alternating; and the stools are extremely unnatural, being either nearly black, or clay-coloured, or sometimes like yest. These are always accompanied by more or less of a sensation of pain, uneasiness, or weakness in the back and loins. There is a sallow, haggard expression of countenance; and as the disease pro-

influence of the ingesta on urinary deposits, Dr. Wilson Philip draws the following conclusions from an interesting and long series of experiments which he performed on this subject.* "1. That acid and acescent ingesta tend to increase the deposition of lithic acid from the urine, and to prevent that of the phosphates. 2. That a diet composed of a large proportion of animal food tends to lessen the deposition of lithic acid, and to increase that of the phosphates. 3. That every thing which promotes the action of the skin tends to prevent the deposition of lithic acid, and to occasion that of the phosphate. 4. That dyspepsia tends to increase the deposition of lithic acid, and to lessen that of the phosphates, both by producing acidity of the primæ viæ, and by rendering the skin inactive. 5. That indolence has the same tendency, both by inducing dyspepsia and by lessening the activity of the skin in proportion as it impairs the vigour of the circulation. 6. That an acid passes by insensible as well as sensible perspiration." Dr. Prout observes, that "an unusually heavy meal, especially of animal food or of bread, is invariably followed by a deposition of the lithate of ammonia from the urine."

From these observations it is evident that our most efficacious antilithic means, consist of such remedies as are calculated to invigorate the digestive organs, and to correct the morbid contents of the primæ viæ; and especially a proper attention to the nature and quantity of the food.

With regard to lithontriptics, or those articles which are supposed to have the power of dissolving urinary

ceeds, symptoms somewhat analogous to those of diabetes begin to appear."—*Prout's Inquiry into the Nature and Treatment of Calculous Affections*, p. 152.

* Medical Transactions of the College of Physicians in London, vol. vi. 1820.

calculi, it is obvious that they can produce no solvent effect until they are brought into immediate contact with the calculi. Their modus operandi must therefore be very different from that of the antilithic remedies. These appear to produce their remediate effects chiefly by favouring healthy digestion and chylification, and by thus preventing the formation in the digestive and chylopoietic organs of an undue proportion of those materials from which the urinary deposits are formed by the kidneys.

The former remedies, on the other hand, pass through the circulation, and being thrown into the urinary organs, exert a solvent power upon the lithic concretes, existing in the kidneys and bladder.

When we reflect how great an influence diet and the state of the digestive organs have upon the nature and quantity of urinary deposits, it would appear highly probable that the ingredients out of which these deposits are formed by the kidneys, are prepared for them in the digestive and assimilative organs, and that they are not formed by the renal emunctories "from whatever may be presented to them indiscriminately."* If this be the fact, it is clear that the remedies which check the formation of urinary sediments act before they reach the kidneys; and that in proportion as they are adapted to restore the healthy condition of the digestive and chylopoietic organs, so are they calculated to act beneficially in the lithic acid diathesis.

It is very questionable, whether we possess any remedies capable of dissolving calculi existing in the urinary organs. The attempts at removing calculous concretions by remedies of this kind having hitherto, with very few exceptions, proved abortive, is a fact which sufficiently warrants the scepticism which pre-

* Prout.

vails on this subject. Still, as it is ascertained that some substances exert an evident solvent power upon calculi out of the bladder, and as it is moreover equally well established, that these very substances, when taken internally, are absorbed and carried to the bladder, there would appear some reason to expect advantages from the employment of remedies of this kind in calculous cases. Mascagni states, that after using the carbonate of potash, he found his urine so impregnated with it as to convert the yellow colour of turmeric to a brown, and to evince no slight solvent power upon a calculus put into it. It must, however, be observed, that the alkalescence of the urine produced by the internal use of an alkali, is but very transient. Mr. Brande states, that in the experiments he made on this subject, he found "that the effects of the alkali, in becoming prominent in the urine, was at its maximum probably in less than a quarter of an hour after it had been taken into the stomach; and in less than two hours the whole of the alkali had passed off."

In speculating upon the lithontriptic power of certain substances, it must not be forgotten that well attested cases are on record, in which the internal employment of such remedies was followed by a complete cessation of all the symptoms indicating the presence of urinary calculus, and where, notwithstanding, the calculus still remained in the bladder, as was ascertained by the introduction of a catheter. Early in the last century a Mrs. Stephens received a large pecuniary reward from the British parliament for discovering a remedy which she used with signal success in calculous affections. It was found, however, that although her patients got rid of all their painful symptoms, the calculi were not dissolved.

De Haen relates a remarkable case of this kind, in which he gave, from November, 1756, to June, 1757,

seventeen pounds of Venitian soap, fifteen hundred pounds of lime-water, and the same quantity of milk. Under this treatment the patient gradually got better until all his calculous symptoms entirely vanished. Notwithstanding this apparent cure, the presence of a calculus was still demonstrable by the sound.* Sir E. Home mentions two cases where the symptoms had subsided under the employment of alkaline medicines, but on dissection the calculi were found of great size, imbedded in cysts. He moreover states, that in some instances the calculous concretions increased rapidly while the patients were taking these remedies regularly. One patient took alkaline medicines four or five years, and "at his death the bladder was found nearly filled with light spongy calculi of different sizes, not less than three hundred and fifty in number. Another who had taken soda, both mild and caustic, for some months, and then submitted to the operation on the symptoms increasing, was found to have a calculus, which was surrounded with a coat of triple phosphate one-tenth of an inch thick, the rest being a mixture of uric acid and phosphates." Whytt supposes that, in cases where the symptoms disappear under the use of lithontriptics, the calculi, though not dissolved, have their asperities removed, and that they are coated by a mucilaginous crust by which they are prevented from doing injury to the tender parts with which they are in contact. "Exemplo nobilissimi equitis H. Walpole aliorumque, debuit concludere si calculi non solverentur, eis tamen asperitates demi, circumvolvique crustam mucilaginosam, quæ ne noceat

* Calculi verus martyr sumptis libris 17 saponis Veneti, 1500 libris lactis, et 1500 libris aquæ calcis, liberatus sic fuit, ab ejus symptomatibus, ac si ultra no adesset calculus; qui tamen et post curam, et elapso post eandem anno, præsons demonstratus cathetere fuit.—*Ratio Medendi*, vol. i. p. 138.

calculus, efficiat."* Dr. Marcet† also contends, that although little or nothing can be expected from this class of remedies, in destroying calculi already formed, "yet in some instances the sharp edges of small calculi may be so blunted by the internal use of chemical solvents, as to allow them to be passed with less difficulty and inconvenience." Where, therefore, the symptoms of calculus disappear under the internal use of solvent remedies, we cannot conclude positively that the calculi have been dissolved and removed out of the system, especially if they be located in the kidneys, in which case we can derive no information from examinations with the sound.

Experience is therefore decidedly opposed to the opinion which ascribes any very particular solvent power to this class of remedies. From the same source, however, we learn with equal assurance, that these remedies are often of unequivocal advantage in certain gravelly affections, and especially in counteracting the tendency which often prevails in the system to form an excess of lithic matter with urine. I would, however, ascribe very little to the solvent power of these remedies; nor can I believe that they produce any very considerable effect by the power they may have of neutralizing the uric acid before it has time to form concretions, and thus prevent, as Mr. Brande supposes, the further increase of calculi.‡ The medicines which are most useful in this respect, tend to correct acidity in the primæ viæ, and to favour the digestive process; circumstances which I have already said have a very intimate relation with the generation of lithic matter by the renal emunctories.

* I have not access to the works of Dr. Whytt, and therefore quote from De Haen's Ratio Medendi, vol. i. p. 136.

† Marcet on Calculous Disorders. London, 1817.

‡ Philosophical Transactions, for 1810, Part I.

In treating of the particular articles of this class of remedies, I shall have occasion to speak more especially on this point; to which, therefore, I now proceed.

CARBONAS SODÆ ET POTASSÆ.

When we advert to what has already been stated, concerning the tendency of acid and acescent ingesta to increase the secretion of lithic acid and its compounds, by the kidneys; and of the influence of an acid condition of the contents of the primæ viæ, from indigestion, there can be no difficulty in perceiving that the fixed alkalies may operate beneficially in urinary depositions composed of lithates or lithic acid. For, whether we admit their solvent power or not, it would appear quite reasonable to suppose, that as these urinary sediments are more copiously secreted by the kidneys when morbid accumulations of acid exist in the stomach and bowels, the remedies in question would, by removing this exciting cause, tend to correct the renal secretions. I would not, however, ascribe every thing, in this respect, to the mere antacid properties of the alkalies. They are, undoubtedly, absorbed to a degree into the circulation, and again thrown into the urinary secretion, and may thus exert some remediate effect, not only by their immediate action upon the secretory vessels of the kidneys, but also, in a small degree, perhaps, by their solvent properties. Be this as it may, there can at present be but little doubt of the utility of alkaline remedies in correcting the lithic acid diathesis, or of occasionally affording relief in nephritic and calculous affections.

It is thought by some late writers* that the alkalies are inferior to magnesia, as antilithics; and Sir E. Home

* Sir E. Home, Brande, Scudamore, Prout, &c.

accounts for their inferiority, by supposing it to depend on the greater insolubility of the magnesia, and in consequent longer retention in the stomach, affording it thereby a greater opportunity of counteracting "the formation of uric acid." I am much more inclined, however, to adopt the opinion of Scudamore on this subject. He contends, "that although some advantage is afforded to the alimentary canal by its power of neutralizing acid matter, yet that its (magnesia) chief superiority over the alkalies depends on its purgative qualities; so much more easy is it to arrest the morbid process of digestion by a medicine which removes the cause, than by one which merely has the effect of temporary correction."

When the lithic acid sediments prevail, we almost invariably find the digestive process out of order, and much acidity in the alimentary canal; and from what I have already said concerning the connexion between such a state of the digestive organs, and the secretion of uric acid by the kidneys, it is quite plain that the alkalies are the proper remedies. For, although it does not appear that they reach the urinary passages in sufficient quantity to exert any particular solvent power upon the pre-existing calculous matters in these organs, still, however, the prevailing tendency of the system to form lithic matter may be checked, "by the beneficial changes which they produce during the first stages of assimilation, by neutralizing excess of acid, or otherwise disturbing those affinities, which, in the subsequent process of assimilation and secretion, give rise to calculous affections."* Independent of the effects which are here ascribed to the action of the alkalies, they appear to possess very considerable power in allaying the morbid irritability of the urinary passages. It is

* Marcet.

very different, however, with the white urinary sediments. These, as has been observed above, consist of earthy phosphates, forming a triple compound with ammonia, and are in general unconnected with indigestion, and acidity in the primæ viæ. In urinary sediments of this description the alkalies are not only useless, but absolutely pernicious. "The white sediments," says Mr. Brande, "may always be abundantly formed by alkaline medicines, and persons who habitually drink soda water, or take magnesia, are frequently voiding it. Its appearance, in the latter cases, has often led to serious errors. I have known soda water, exhibited in a case of a stone in the bladder, to refer abundance of white sand, which the ignorance of the patient and his medical attendant led them produce to the solvent power of the medicine upon the stone, which they thought was giving way, and being voided; whereas great mischief was doing by giving the urine more than its usual tendency to deposit the phosphates, and consequently to augment the size of the calculus."*

The alkaline carbonates are generally given in preference to the pure alkalies. They appear to answer equally well, and are much less offensive to the stomach. "The stomach," says Dr. Paris, "appears to bear the protracted exhibition of the carbonate of potass and soda with more temper than it does any other alkaline combination. From twenty to fifty grains of carb. of soda or potass may be taken two or three times a day. The liquor potassæ, or sodæ, may be taken in solution in doses of from gtt. xv. to gtt. l. two or three times a day, in veal broth or table beer," which latter is said to disguise its nauseous flavour completely.

* Brande's Observations on the Medico-Chemical Treatment of Calculous Disorders. Quarterly Journal of Science and the Arts, No. 12.

Whilst pursuing a course of alkaline remedies, it will be useful occasionally to interpose a purgative medicine. Upon this point Dr. Paris observes, "but we must not combine it (the purgative) with the lithontriptic, for it is a law, that catharsis suspends the process of absorption." If it were true that the antilithic power of the alkalies depended on their being absorbed and conveyed to the urinary organs, this caution would no doubt be very proper. But this is extremely doubtful; and it appears, moreover, that magnesia, whose powers in this way are superior to those of the alkalies, operates most beneficially when it produces a purgative operation.

Besides, the existence of such a law is by no means established. Every one must, indeed, admit that while purging is going on absorption must be diminished; but it is much to be doubted whether it is suspended. Rhubarb impregnates the urine with its colour, notwithstanding its purgative operation;—here absorption is not suspended. From Mr. Brande's experiments, it appears very clearly that neither the carbonates nor sub-carbonates of the fixed alkalies exert any sensible action on uric acid; and it seems equally clear, from what this able writer says, "that an alkali administered to a calculous patient stands no chance of reaching the uric concretion in a caustic state." If these facts be correct, and there can scarcely be a doubt on this point, we have a very plausible explanation of the inefficacy of the alkaline carbonates as solvents of urinary calculi. Alkaline solutions have been injected into the bladder through the urethra; I have not, however, learned that any decided advantage has been gained from such a practice. Fourcroy and Vauquelin paid particular attention to this mode of dissolving urinary calculus.

Incompatible substances: "acids and acidulous salts, borax, muriate of ammonia, acetate of ammonia, alum, sulphate of magnesia, lime-water, nitrate of silver, ammoniated copper, muriate of iron, submuriate and oxymuriate of mercury, acetate of lead, tartarized antimony, tartarized iron, the sulphates of zinc, copper, iron, &c.

MAGNESIA.

The antilithic powers of magnesia are very considerable, and appear to be pretty generally acknowledged by the practitioners of the present day. Mr. Brande, in an interesting paper published in the Philosophical Transactions, first directed the attention of physicians to the efficacy of this remedy in preventing the formation of certain varieties of urinary depositions. Instead of pursuing the hopeless inquiry after an efficient solvent for urinary calculi, physicians and chemists have of late endeavoured to ascertain the nature of urinary sediments, and the causes which influence their increase and decrease, "with the view of administering such preventive medicines as may indispose the system to produce those concretions, or check their growth, without altering the tone of the constitution." From some trials made by Mr. Brande, he found that magnesia diminished the quantity of uric acid in the urine more promptly and conspicuously than any of the alkalies, however largely administered. He relates four cases in which the antilithic powers of this remedy were unequivocally displayed.* The first was a gentleman whose urine was constantly highly

* On the efficacy of Magnesia in preventing an increased formation of Uric Acid, &c. by W. T. Brande, M. D., in the Philosophical Transactions, 1810, Part I.

charged with uric acid, which was deposited in the form of red sand or crystals. He successively took the subcarbonates of soda and potass without any benefit from the former, and but little from the latter. He was finally directed to take fifteen grains of magnesia three times a day; in a week after commencing with this remedy the uric deposits were sensibly diminished. The medicine was continued for eight months, and the urinary deposit disappeared entirely. Another patient, suffering from a similar complaint, after having tried the alkalies ineffectually, was wholly cured by taking twenty grains of magnesia, night and morning, for six weeks only. The third case is that of a person who succeeded in removing repeated attacks of uric acid, by the use of magnesia. The fourth case was a confirmed calculous tendency, which yielded almost completely to the free use of magnesia. Dr. Scudamore, whose opinion deserves great weight, does not admit the claims which are allowed to magnesia, as a remedy in gravelly affections. "I condemn," says he, "any unlimited confidence in this medicine, as being, in most cases of complaint, a very inadequate remedy for the disease which is existing. The gravel and the gout are, as it were, but symptoms of the morbid action of other parts; and the primary disease and its true cause, is to be found in the digestive organs. But the gravel has a deeper foundation than the mere production of acid matter in the alimentary canal. In these cases we must look with vigilance to the state of the stomach, of the liver, and of the bowels, and to all the digestive assimilation, in connexion with the wrong functions of the kidneys, in a manner less superficial than the rule of placing all our dependence on magnesia, or upon any alkaline medicine whatever, seems to imply. We shall learn that these remedies are use-

ful, and even important, as auxiliary parts of treatment, but that they do not deserve any higher character, or stronger dependence."*

It is scarcely necessary to observe, from what has already been said, that magnesia, like the alkalies, can only be properly administered in gravelly affections when the urinous precipitate is of the uric acid description; without an attention to this circumstance, the use of magnesia may become very pernicious in calculous complaints. I have lately employed this remedy in the case of a person much harassed by indigestion, and whose urine was loaded with an uncommon quantity of uric acid. The vessel into which he discharged his urine was coated with a crust of this substance. I ordered him twenty-five grains of magnesia three times a day, with infusion of gentian and orange peel. In less than three weeks the uric deposit had nearly disappeared; but I could not succeed in removing it wholly, although he took it for upwards of four months. Magnesia has lately been strongly recommended as a remedy for diabetes. Dr. Trotter has published an account of five cases which were effectually cured by this remedy. He directed his patients to take from one drachm and a half to two drachms of the pure magnesia in twenty-four hours. The relief obtained from it was generally very prompt, and the cure in the course of a few weeks perfect.†

Since publishing the first edition of this work, I have had occasion to prescribe in two cases of diabetes. In one case, which was of long standing, but not very violent, the magnesia proved effectual. In the other case, however, which was violent and rapid in its progress,

* Scudamore on Gout, p. 256.

† London Med. and Phys. Jour. vol. xxxix. p. 366, and vol. xlvii. p. 460.

this remedy did not produce the slightest beneficial effect.

AQUA CALCIS.

Lime-water* was formerly much employed in calculous affections; and there can be no doubt of its having sometimes manifested very useful powers in these complaints.

Like the two former articles, it exerts but little or no solvent power upon urinary concretions, when taken internally. It appears to act chiefly by correcting that state of the digestive organs upon which the lithic acid diathesis would seem to depend. Whytt, De Haen, Alston, and others mention cases of its successful employment for the removal of the symptoms of calculous complaints. It appears that, like the alkalies, it has been known to give effectual relief in calculous complaints, without, however, dissolving or removing the calculus. I have already quoted a case of this kind from De Haen, and similar ones are related by Whytt, Alston, and others. In nephritic affections, depending on calculous concretions, or on too abundant a secretion of uric acid, the free use of lime-water will often afford great relief.

Lime-water is generally directed to be given in milk to the extent of from a pint to a quart daily. Whytt gave it in combination with soap; but it does not appear to be more powerful in this way, and is much more unpleasant to take, than when mixed with milk. Attention must be paid to the nature of the urinary deposit: its exhibition, where the phosphates predominate, would prove not only of no avail, but very pernicious.

Lime-water has been employed for various other

* Contains about 1-680 of lime.

remediate purposes. It has been much recommended for its good effects in diabetes. Dr. Ferriar constantly gave it as an auxiliary remedy with cinchona, opium, and uva ursi. Shutz and Wilhelm, two German writers, detail cases of diabetes mellitus and insipidus, in which the use of lime-water alone proved successful.* It has also been employed with advantage in dysury depending on excess of lithic acid in the urine. In a case of this kind I prescribed it with the happiest effect. Pringle, Mar, and others recommend lime-water with milk in phthisis, and not a few cases have been reported in testimony of its efficacy.

As gout is always connected with a lithic acid diathesis, lime-water having a tendency to counteract such a disposition, may often be usefully employed in the chronic form of the complaint. It is very advantageously united with bitters in gouty complaints. In the cure of obstinate scorbutic ulcers, lime-water has been known to produce very excellent effects. There is a case of this kind related in the first volume of the London Medical Observations and Inquiries, which was effectually relieved by taking three pints of lime-water every day for five months, after a multiplicity of other means had been tried without any benefit. The ulcer was of several years standing, and situated on the left leg. Hoffman asserts that there is no remedy equal to lime-water in that variety of scurvy which proceeds from the continued use of salted diet. Baumbeck speaks well of lime-water as a remedy in cancer; but it is scarcely necessary to observe, that in this respect it is not entitled to the least attention.† It has also been found useful in chronic dysentery, leucorrhœa, and

* Hufeland's Journal of Practical Medicine, vol. ii. p. 128.

† Vogel. Repos. Dissertatio de curatione cancri oculti et aperti per aquam calcis vivæ potam præstita. Gotting. 1769.

chlorosis. It may in general be usefully given in all cases, attended with a sluggish, phlegmatic habit of body, and an acid state of the contents of the alimentary canal.

As an external remedy lime-water may be applied to very useful purposes. With olive oil it forms a most excellent liniment for burns and scalds; and with corrosive sublimate, it constitutes the aqua phagedenica, a highly useful wash for foul and sluggish ulcers, particularly of the syphilitic kind.

According to Hufeland and others, lime-water mixed with some mucilaginous decoction, forms an exceedingly useful injection for the removal of ascarides.

If the internal use of lime-water occasions heat and thirst, the sweet spirits of nitre ought to be given two or three times a day, according to the advice of Whytt. It is, in general, useful to employ some bitter tonic infusion whilst taking the lime-water. Acid drinks must be avoided during a course of lime-water.

MINERAL ACIDS.

The alkalies and alkaline earths, as is stated above, are the appropriate remedies in the lithic acid diathesis. They can only be employed with propriety as antilithics, when the urinary deposits are of the red or lateritious kind, or in other words, consist of calculous matter, in which the uric acid predominates. As might be supposed, quite the reverse obtains in relation to the employment of the mineral acids in calculous affections. These are by no means fit remedies when the sediments are of the uric acid kind; but their antilithic power is generally unequivocally evinced in complaints in which the phosphatic diathesis prevails, and where the calculous sediments are white, or of that species in which

the earthy phosphates predominate. "When from any cause," says Mr. Brande, "this white sediment appears, the internal use of acids will, in most cases, diminish or remove it." It is asserted by those who employ the alkalies and acids in calculous complaints, on chemical principles, that the urine "has a tendency to deposit white sand whenever its natural acidity is diminished, as is shown by the addition of a little alkali to recently voided urine, which immediately throws down a white powder." The modus operandi of acids in preventing such deposits would therefore appear to be easily explained; for as it is demonstrable that acids taken into the alimentary canal show themselves again in the urine, it is evident that, to obviate the depositions of this white sediment, we need only to exhibit an acid internally, with a view of augmenting the acidity of the urine, and thereby enabling it better to hold its earthy phosphates in solution. Dr. Scudamore opposes the chemical theory on this subject, and maintains that the phosphates are deposited, notwithstanding the existence of a free acid in the urine. "I have now arrived at the end of an extensive examination of specimens of urine depositing the phosphates, and also holding them in solution, yet still having the power of reddening litmus in the usual manner."* He thinks that the mineral acids are useful in cases where the gravelly deposit consists of the earthy phosphates, simply by their tonic action on the stomach. That acids may prove advantageous in such complaints, by their tonic operation, can hardly be doubted. But if any considerable share of their good effects depended on a tonic influence, we ought, I think, to see them as efficacious in the lithic acid depositions as in those consisting of the earthy phosphates, since the former

* Scudamore on the Gout, p. 256. American edit.

are generally even more conspicuously connected with a weakened state of the digestive organs than the latter. Still, however, it is undeniable, that bark, exercise, bitters, and mineral tonics, are often successfully employed in complaints attended with urinary deposits of this kind. "The febrile affections of children are very frequently attended by an apparently alarming deposit of white sand in the urine, and a dose of calomel will often carry off both the fever and sand."

Whatever may be the modus operandi of mineral acids in diminishing the earthy phosphates of the urine, their utility in this way seems to be fully established.

The nitric, the muriatic, and the sulphuric acids, have each been employed to check the formation of white urinary sediment. The nitric acid is thought, by Mr. Brande, to be more liable to occasion those symptoms of indigestion which are attended by flatulency and eructations, than the other two acids, "and in a few particular cases its long continued use has rendered the patient reluctant to food; though many instances might be cited of its tonic effects, as a promoter of digestion and increaser of appetite."

The sulphuric acid has a much more uniformly tonic effect, and may usually be persevered in much longer than the nitric and muriatic acids, without producing griping and other disagreeable gastric affections. The muriatic acid, though mostly agreeing very well with the stomach, is apt, by long use, to act upon the bowels, and to bring on a troublesome diarrhœa. "This circumstance," observes Mr. Brande, "however, often recommends it; for constipation very frequently attends the state of the body which favours the formation of white sand." "When the mineral acids agree," says this writer, "they are usually very effective, and in a few days they diminish or entirely prevent the forma-

tion of the sabulous deposit; but where they disagree they rather increase the quantity, or they tend to the production of a mucous secretion, probably from the coats of the bladder, which envelops and is voided with the sand, and which, in particular cases, may certainly tend to increase the risk of its agglutinations, and of the formation of a concretion in the bladder. The mineral acids, too, almost always disagree with children, who are equally liable with adults to an increased secretion of the phosphates, and in whom prompt and effectual treatment is equally requisite to prevent the formation of a stone in the bladder."* In cases of this kind recourse must be had to the vegetable acids. The tartaric acid may be given freely, either in a pure state or in combination, as in cream of tartar. From five to twenty grains of the former, and from twenty to sixty of the latter, may be administered two or three times a day. The citric acid is, however, preferable to the tartaric, and may be administered in doses of from five to sixty grains; it rarely proves inconveniently purgative, and is very effectual in modifying the secretion of urine.

Although the vegetable acids, when properly administered, will seldom increase the phosphatic diathesis, yet it appears from the observations of the writer I have just quoted, that cases do occur where a copious white deposit is attended with a peculiar irritability of the bladder, and which are aggravated by any of the acids just mentioned.

When a copious white sabulous deposit in the urine is connected with a biliary derangement, as is sometimes the case, it will be best to depend rather on an acescent regimen than on medicine; "and to obviate

* Brande on the Medico-Chemical Treatment of Calculous Disorders. Quarterly Journal of Science and the Arts, No. 12.

costiveness, if necessary, by an occasional dose of magnesia in a glass of sour lemonade."*

CARBONIC ACID.

This gaseous acid was at one time much in vogue as a solvent for urinary calculi. It appeared from the experiments of Hales, that water impregnated with carbonic acid, has the power of gradually dissolving urinary calculi; and it was demonstrated also that, when taken into the stomach, it soon makes its appearance in the urine. Hence it was concluded, that by means of this aerial fluid, we might readily dissolve "human calculi while yet in the bladder;" an opinion which was zealously advocated by Percival, Saunders, and others. Whether the opinion of these men be correct or not, with regard to the modus operandi of carbonic acid, in gravelly disorders, there appears to be no reason to doubt its occasional utility in preventing the white urinary deposit. Where, from peculiar circumstances, in cases of this kind, the other acids disagree with the patient, the carbonic acid, Mr. Brande observes, will often afford very decided advantages. This acid may be very conveniently taken, as it is dissolved in the artificial mineral waters, "or it may be administered in the form of a saline draught, in the state of effervescence; which is best done by dissolving thirty grains of carbonate of potash, and twenty grains of citric acid, in separate tea-cups of water, and then mixing the solutions in a large tumbler, and drinking the whole during effervescence. This dose may be repeated two or three times a day, or oftener if expedient."†

* Brande.

† Brande, Philososph. Trans., 1813, p. 213.

UVÆ URSI FOLIA.—BEAR BERRY.

The uva ursi is an evergreen, creeping plant; with small, oblong, oval leaves, resembling very closely those of the common garden box. It is indigenous both to Europe and the United States. The leaves have an odour bearing some resemblance to that of hyson tea, and are of a bitterish and sub-astringent taste. They contain "tannin, mucilage, gallic acid, extractive, resin, and traces of lime;" and yield their active principles both to alcohol and water.

The virtues of this plant are variously represented by writers on the materia medica. Alibert says, "all that can be said of this remedy is, that its action is, under certain circumstances, manifestly diuretic;" and he declares that its supposed specific power in nephritic and other diseases of the urinary passages has not the least foundation.

The weight of testimony is, however, greatly in favour of its remediate powers in disorders of this kind. The account given by De Haen of its efficacy in diseases of the urinary organs, is indeed exceedingly flattering, and although few other practitioners may have been equally successful with it, there is, notwithstanding, sufficient evidence extant to warrant us in regarding it as a useful remedy in such diseases. De Haen relates some very remarkable instances of the successful use of uva ursi in calculous and nephritic affections. He employed it with much success, also, in a case of ulceration of the penis and perineum from calculus in the bladder, and in purulent discharges from the urinary passages. He insists, however, that this remedy is wholly ineffectual in cases where there is much derangement of the internal urinary organs, whether from cal-

culi, pus, or the too frequent and long retention of urine. "Magis confirmor," he says, "magisque in eo quod in hoc opere toties monui, nullarum eam virium esse, ubi in systemate urinoso interno multa facta fuerit, sive a calculo, sive a pure, sive ab urina, sæpius diutiusque retenta, degeneratio."*

He states, that in several instances of urinary calculus, this remedy afforded complete relief, "although the catheter showed that the calculus still remained." It does not appear from late experience, however, that any dependence is to be placed on this remedy in calculi of the bladder. In nephritic affections from gravel and other cases, we have abundant proof of its utility. Dr. Ferriar, whose testimony deserves the highest respect, says, "I have given this remedy (uva ursi) in a considerable number of nephritic cases, in very moderate doses, and always with manifest advantage." It must be confessed, however, that we are by no means warranted in ascribing all the good effects of the practice detailed by Dr. Ferriar to the uva ursi. He states, that "when the pain was very acute and the pulse quick, he began the cure with bleeding and a gentle purgative, composed of manna and a neutral salt. This purgative he repeated twice a week, and on the intermediate days directed the patient to take five grains of uva ursi, and half a grain of opium, three or four times a day.† Out of sixteen patients treated in this way he cured twelve. It is impossible to say how much of the good effects of this treatment is to be attributed to the uva ursi. That however some, perhaps a considerable share of the success, is to be ascribed to this remedy, may be inferred from its beneficial operation in diseases of this kind, when administered by itself, as

* Ratio Medendi, vol. iii. p. 117.

† Medical Histories, vol. i. p. 56.

I have myself witnessed in a few instances. Dr. Ferriar observes, that he never found it necessary to give it in larger doses than five grains, and that in doses of a scruple or half a drachm he found it to produce nausea, even when given with opium. The same circumstance is mentioned by Lewis. "In all the cases," says he, "that have come to my knowledge, it produced great sickness and uneasiness."*

In that variety of urinary disease which is attended with copious white sediment in the urine, especially in the last portions discharged, occasioning pain and irritation in the urethra, Dr. Prout states, that "he has often seen the greatest advantage from the combined use of muriatic acid, hyosciamus, and uva ursi, together with the use of alterative purgatives." I have a patient under my care now, who has been for upwards of two years exceedingly afflicted with a pain in the region of the right kidney, attended with all the usual symptoms of renal calculus. He has been gradually getting better under the use of uva ursi and opium, in doses of twelve grains of the former with half of the latter, three times a day; and is at present almost entirely free from any symptom of his disease. The late professor Barton thought it particularly serviceable in nephritis depending on gout. "In my own nephritic paroxysm," he observes, "alternating with attacks of gout in the feet, I have certainly found the medicine of much service; and I confidently and with much pleasure recommend it to the notice and trial of other sufferers from the same affection."†

Of the modus operandi of uva ursi in nephritic and calculous disorders, we are entirely uninformed; nor will I consume the reader's time by speculations upon

* Materia Medica.

† Barton's edition of Cullen's Materia Medica, vol. ii. p. 422.

a topic which has been so fruitlessly attempted by many of the ablest physicians.

The remediate employment of uva ursi has, however, not been confined to affections of the urinary organs; it has been equally extolled in the cure of other maladies, particularly in diabetes, consumption, leucorrhœa, hæmaturia, and gonorrhœa.

In the treatment of diabetes, Dr. Ferriar was in the habit of giving it in conjunction with cinchona, opium, and lime-water.* Dr. Bourne, professor of the practice of physic in the University of Oxford, speaks very highly of the efficacy of uva ursi in the cure of pulmonary consumption. He states, that out of sixteen cases treated with this remedy, nine were cured, four relieved, and three died. This is certainly very extraordinary success; and is calculated to create the suspicion that some error in *diagnosis* may have occurred. He gave the medicine in ten grain doses, with half a grain of opium, three times a day.†

It is best administered in the form of powder. The dose is from ten grains to one drachm.

HUMULUS LUPULUS.

The hop was at one time much recommended for its supposed lithontriptic properties. It has also been accused of being favourable to the production of calculous affections. From my own experience I can say nothing in favour of its antilithic powers. Nor do I believe that it is entitled to any attention for its properties in this respect. Several of the bitter astringent

* ℞.—Pulveris uvæ ursi, corticis Peruvian. āā ℈i. opii gr. ss. quater in die sumend. bibat aquæ calcis ℥ii. postsing. dos. pulveris.

† Cases of Pulmonary Consumption, &c. healed by Uva Ursi, to which are added some Practical Observations. London, 1806, p. 393.

vegetable medicines have been commended for their good effects in cases of gravel and calculus. The gentiana lutea and quassia have been particularly mentioned as useful in affections of this kind. From the frequent connexion of gravel and disordered function of the digestive organs, and the apparent dependence of the former on the latter, it is not at all unlikely that these articles may often produce beneficial effects in nephritic and gravelly disorders. They may in general be very usefully given conjointly with the alkaline antilithics, as has already been stated when speaking of these remedies.

CHAPTER XVII.

IV. *Medicines that Promote the Secretory Action of the Salivary Glands.*

SIALAGOGUES.

HYDRARGYRUS.

It does not appear that the Greek and Roman physicians had any knowledge of the medicinal properties of mercury. They regarded it as a dangerous poison, and excluded it from the materia medica.* It was first employed by the Arabians, as an external remedy in the itch and other cutaneous eruptions. The corrosive sublimate and red precipitate, two of the most active preparations of this metal, are mentioned by Geber; and both Rhazes and Avincenna speak of the outward employment of mercurial remedies. In Europe mercury was used externally in cutaneous disorders, as early as the twelfth century, by Gilbert, Theodoric, and others; but it was not employed as an internal remedy until early in the sixteenth century, when John de Vigo first gave it in the plague. About the same time Mathiolus used it internally in the cure of lues venerea; and Paracelsus adopted and advocated its employment with his characteristic zeal and enthusiasm. From this period the reputation of this medicine gradually extended itself, though not without great opposition; its powers be-

* Δύναωμιν δέ ἔχει φθαρτικὴν ποθειτα τῳ βάρει δια ϐιϐρώσκυσα τὰ ἕτϐ.—*Dioscorides*, lib. v. cap. cx.

came more correctly appreciated; and its application to the cure of diseases conducted upon more rational principles.

In its metallic form mercury does not appear to possess any medicinal properties; but in the state of its various preparations its influence on the animal economy is extensive, powerful, and important. Such, indeed, is the variety and extent of its remediate powers, that it may be most effectively employed in the form of its different preparations, as a sialagogue, an errhine, a cathartic, a diuretic, a sudorific, an emmenagogue, an astringent, a stimulant, an antispasmodic, and an anthelmintic; and hence we at once see how exceedingly various and important must be its therapeutic relations. Of all the sensible effects of mercury, salivation is the most remarkable, and viewed as an evidence of its specific or general influence, undoubtedly the most important result of its operation.

Mercury, it is observed by Cullen, "acts as a stimulus to every sensible and moving fibre of the body." What the peculiar character of the excitement which it produces may be, it would be in vain to inquire; but it appears to be more permanent and universal than that of any other medicinal agent with which we are acquainted.

There are three modes in which mercury appears to act in producing its effects on the animal economy; 1. It is absorbed into the circulation and acts through the medium of the blood. 2. It produces a primary impression in the part to which it is applied, which impression is propagated to other parts by means of the nerves. 3. It acts locally, by simply exciting an action in the parts to which it is directly applied.*

* Dr. A. W. Ives, in the Appendix to Hamilton's Observations on the use and abuse of Mercurial Medicines.

That mercury is carried into the circulation, and conveyed with the blood, throughout every part of the system, is demonstrated by the fact of its presence having been detected in the solids and fluids of the body, and particularly in some of the secretions. Zeller states, that he found quicksilver in the bile; and Wepfer,* Laborde,† Brodbelt,‡ and others mention instances in which this metal was found in the bones of persons who had died after severe and tedious mercurial courses. Dr. Hamilton detected globules of mercury in the milk of women in a state of salivation; and it is a fact well attested, that gold worn near the skin, by persons taking mercury, occasionally becomes covered with a white amalgam,—a circumstance which proves the presence of mercury in the cutaneous discharges. The absorption of mercury into the circulation, may also be inferred from the peculiar metallic taste of the tongue, and the well known mercurial odour of the breath and perspiration of those who are under the specific influence of this metal.

Dr. Ives, in the very excellent essay on the modus operandi of mercury to which I have already referred, observes: "Where mercury produces its specifiic action on the constitution, it appears to be previously absorbed into the blood-vessels. It there becomes a new and peculiar source of irritation to all the organs concerned in the circulation and the various secretions; it extends its influence through the medium of the blood to the nervous system, increasing its irritability, and thereby reacting upon the heart and arteries, and thus perpetuates the train of constitutional morbid associations which constitute mercurial fever."

* Wepfer, Observationes Anatom. p. 303.

† Journal de Médecine, tom. l. p. 27.

‡ Samlung auserles. Abhandl. f. pr. Artz. B. xix. s. 547.

With regard to the sympathetic effects of mercury, also, I will quote the observations of Dr. Ives, because they express in clear and concise terms what I would wish to say on this subject. "It has been shown, by the experiments of M. Bichat, and it is confirmed by daily observation, that the secretory action of the glands is increased by stimulating the mouths of their excretory ducts; it is in this way that mercurial preparations usually excite their deobstruent effects; but they appear also to have a sympathetic action, which is much more extensive. It is that which Mr. Hunter, in order to illustrate the spread of disease, has denominated continuous sympathy, and which Bichat has pointed out as being maintained with peculiar vigour between membranes of the closest similarity of structure. In this way it seems that mercurial medicines, when taken into the stomach, extend their operation to other and distant portions of the mucous membrane, producing an increased discharge from the kidneys, lungs, skin, &c. Other medicines frequently exert their influence by this sympathetic action, particularly on the mucous membranes; astringents are often applied to one portion of this membrane, to check a hæmorrhage in another portion."

The local operation of mercury is manifested, by the purging and vomiting which some of its preparations produce; it is also evinced by the effects which very minute doses of calomel display in allaying morbid irritability, or inordinate peristaltic action of the alimentary canal, in cholera, diarrhœa, &c.

When mercury is introduced into the system so as to excite its specific action, it at first increases the action of the heart and arteries; the pulse becomes quick, tense, and occasionally full; the gums become tender, accompanied with a peculiar metallic taste of

the mouth and fœtor of the breath. If the mercury be pushed further, the tongue, gums, and salivary glands, begin to swell; the teeth become painful and loose; the saliva flows in great abundance; small ulcerations make their appearance on the tongue, gums, and roof of the mouth; the appetite fails; occasional pains are felt in the stomach and bowels; the countenance acquires a peculiar expression, indicative of a distressful morbid irritability of the system; and much debility and emaciation commonly ensue. These are the ordinary phenomena of a regular mercurial course. Instances, however, occur, in which, owing to peculiar susceptibilities of the system, the action of mercury produces a train of symptoms which, so far from being salutary, are attended with much distress and danger, and permanent injury to the constitution. Palsy and epilepsy, and even death, have been known to supervene, in consequenee of the action of mercury. Mr. Pearson has described these unfavourable effects of mercury under the name of *erethismus*. "This state," he says, "is characterized by great depression of strength, a sense of anxiety about the præcordia, irregular action of the heart, frequent sighing, trembling, partial or universal, a small, quick, and sometimes intermitting pulse, occasional vomiting, a pale contracted countenance, a sense of coldness; but the tongue is seldom furred, nor are the vital or natural functions much disordered."

Fortunately, however, these distressing consequences of the action of mercury are but very rarely witnessed, and appear to depend either on idiosyncrasy of constitution, or on improper exposure and management during the mercurial influence. Every powerful article of the materia medica, indeed, may, under circumstances of idiosyncrasy or mismanagement, produce

deleterious consequences. It is the abuse of such remedies that renders them dangerous: cautiously employed, they are the means which God has placed in the hands of man, to mitigate and remove pain and disease.

We sometimes meet with persons so insusceptible to the action of mercury, as to make it extremely difficult, or even impossible to bring them under the specific influence of this remedy, unless measures be resorted to capable of doing away such resistance to its operation. In general, a very feeble, and a very full and phlogistic habit of body are alike unfavourable to the action of mercury. When the former condition exists, opium, wine, and the Peruvian bark are indispensable; in the latter state of the body, bleeding and purging are to be employed. But there are states of the system which are neither connected with plethora nor debility, but in which, notwithstanding, there exists a powerful resistance to the operation of this remedy, and in which neither bleeding nor opium is of the least avail. Under circumstances of this kind, I know of no means more powerful in awakening the susceptibility of the system to the influence of mercury, than nauseating doses of antimony or ipecacuanha. My friend and preceptor, Dr. Joseph Klapp, of this city, from whom I learned the value of this practice, has been much in the habit of exhibiting these remedies in conjunction with mercury, with a view of accelerating its specific influence; and he informs me that he has seldom failed to establish the mercurial action in a short time, by these means, after the system had resisted the unaided operation of this remedy for many weeks and months. Upon this subject Dr. Paris remarks: "Reiterated practice has taught me, that the system, in a strong and healthy condition, frequently offers a resist-

ance to the operation of mercury, which is overcome the moment the stomach becomes deranged, the circulation languid, or the general tone of the system impaired. I have frequently seen this during my hospital practice: if a patient who has been using mercurial friction, or taking the preparations of that metal without effect, be tranferred into a close and unhealthy ward, his appetite soon fails, the tongue becomes furred, and the system instantly yields to the influence of the remedy. Nauseating doses of antimony frequently repeated, or the accidental supervention of any disease of debility, will be attended with the same phenomena."* Of the efficacy of nauseating doses of antimony, in overcoming the resistance of the system to the action of mercury, I have lately had a remarkable example. After having tried ineffectually, for nearly two months, to bring a venereal patient under the specific influence of mercury, employed both internally and externally, I at length, by the suggestion of Dr. Klapp, gave him nauseating doses of tartar emetic, and by these means succeeded, in less than three days, in establishing a gentle salivation.

Dr. Paris suggests that nausea, and other causes which derange the digestive organs, favour the salivant influence of mercury, by the power which they may possess of "overcoming the resistance which nature, in a state of health, makes to the admission of poisonous substances into the circulation." This explanation is, however, wholly hypothetical; since it is perfectly ascertained that a state of health is, in general, the most favourable condition of the system for the specific influence of mercury. It is, moreover, predicated upon the supposition that remediate substances are more readily absorbed in a state of debility and disease than

* Paris's Pharmacologia, p. 115. Lond. 3d edit.

in the vigour of health,—a supposition by no means countenanced by experience. Dr. Klapp, in a conversation which I had with him on this subject, suggested that the effects of nausea in favouring the operation of mercury, may be referred to the obvious tendency which sickness of the stomach has to determine the circulation to the salivary glands, and to excite their secretory action, as is shown to be the case by the increased flow of saliva which commonly takes place during nausea. There is undoubtedly a very intimate connexion between the stomach and the glands of the mouth; and it is not improbable that, through this relationship between these organs, nausea may produce the effects which are here ascribed to it.* In relation to this subject Dr. A. W. Ives makes the following observations, which are worthy of much attention: "Cutaneous perspiration has such an intimate connexion with, and dependence on, the circulation, that it is, perhaps, the best criterion of the susceptibility of the system to mercurial action. I have never known ptyalism produced in fever where the skin was perpetually dry, and even in diseases unattended with febrile excitement, I have generally been able to form a correct prognosis of the effects of mercury from the state of this secretion. Hence the importance of combining antimonial preparations with calomel."† Whether, however, we can offer a satisfactory explanation

* This practice of combining nauseating doses of emetic substances with mercury, for the purpose of expediting its salivant operation, was employed by Dr. Klapp several years before Dr. Paris's observations on this subject were published. I have before me an account of four cases, transcribed from the case-book of the Alms-House Infirmary of this city, in which Dr. Klapp exhibited small doses of ipecacuanha with calomel for the express purpose of facilitating its effects upon the salivary glands. These cases occurred in the year 1819.

† Appendix to Hamilton's Observations on the use and abuse of Mercurial Medicines, p. 210.

of the fact in question or not, its practical consequence is not the less obvious and important; and from what I have myself seen, and learned from others on this subject, I am well satisfied that this practice will in general enable us, better than any other means with which we are now acquainted, to overcome the insusceptibility which we occasionally meet with in patients to the specific action of mercury.

Mercury may prove remediate:—

1. By producing a new and peculiar excitement in the system, and thereby overcoming the previous morbid excitement, on the principle suggested by Hunter,—that two different diseases cannot exist in the body at one and the same time, unless they exist in totally different structures. It is in this way, probably, that mercury removes diseases, when exhibited in such doses as to produce no sensible evacuations or affections of the system.

2. By equalizing the circulation, and thereby removing local congestions. It is by an effect of this kind that mercury, in general, acts so beneficially in fevers of a congestive character. "The power which calomel has," says Dr. Armstrong, "in equalizing the circulation is nowhere more conspicuously displayed, than in diseases of a congestive character. Before its exhibition the skin will be cold, wan, and shrunk, the pulse feeble or oppressed, and the whole system apparently relaxed: but as soon as the mouth is made sore from its influence the skin becomes warm, reddish, and distended with vigorous circulation, while the pulse is full, soft, and strong, and the general energy in a great measure restored."

3. By establishing an afflux to the inflamed glands of the mouth, from the neighbouring parts. It is in this way, in part at least, that salivation proves serviceable in hydrocephalus, diseases of the breast, &c.

4. By exciting discharges from the bowels, and the various excretory glands of the body. Hence its utility in dropsy, dysentery, hepatitis, &c.

Having premised these general observations on the employment of mercury, I shall next proceed to a particular consideration of its therapeutic application; and in the last place give an account of its various preparations, and the peculiar remediate purposes to which they are applicable.

Mercury was for a long time almost entirely confined to the treatment of chronic diseases. About the middle of the last century it was introduced by some of the New England practitioners as a remedy in acute inflammatory fevers; and soon afterwards Dr. Robert Hamilton, of Lyn Regis, in England, published his valuable observations on the efficacy of calomel and opium in inflammatory diseases.

Latterly mercury has become a very common remedy in acute disorders; but even at present its powers in these affections are perhaps too little attended to by the profession in general. Dr. Armstrong, upon whose judgment much reliance is to be placed, observes, in relation to this subject, "calomel is a medicine far too much given in chronic, and far too little in acute diseases; for while, when administered with due discrimination, I have never known it prejudicial in acute diseases, many instances have been presented to me where it seemed to have broken up the health in chronic diseases." The result of his experience with this remedy is very strongly in favour of its powers in diseases of high arterial excitement or venous congestions; and the testimony of many other practitioners of great celebrity might be adduced in behalf of this practice.

It appears to be admitted, pretty generally, that mercury is most efficacious in fevers attended with

disorder of the biliary organs, and hence we find it most commonly recommended in the autumnal fevers, or those arising from marsh exhalations.

A great deal has been said both in praise and condemnation of the employment of mercury in yellow fever. From my own experience I can say nothing concerning its powers in this disease; but much respectable testimony is decidedly in favour of its utility in this endemic scourge of hot climates. It was very early employed by some West India practitioners in this disease. The credit, however, of having first extensively used this remedy in yellow fever, and raised its reputation in this respect, is undoubtedly due to Dr. Chisholm. Soon after the mercurial practice was brought into particular notice in the yellow fever of the West Indies, it was adopted and zealously advocated by Dr. Rush and others, in the treatment of this disease as it occurred among ourselves in the year 1793. It appears to be the opinion of those who speak most in favour of the mercurial practice in this disease, that it acts most efficaciously when given in very large and frequently repeated doses, so as to bring the system under its specific influence as speedily as possible. By exhibiting large doses of calomel, at short intervals, the combined advantage of its cathartic and early specific operation will be gained; and experience would seem to demonstrate that this practice, if promptly and decisively employed, will sometimes arrest the disease in its commencement, and recover patients that would, perhaps, under a more gentle treatment be lost. Dr. Bancroft, however, considers the influence of mercury of very doubtful efficacy. He thinks, "that where persons have recovered from the yellow fever, after having been salivated, their recovery was not occasioned by salivation, but was the consequence of such

a condition of the powers of life, and of the functions connected therewith, as induced a mitigation of the disorder."

In the treatment of our autumnal bilious fevers, mercury carefully employed, is a remedy of much importance. I have often observed, that as soon as a tenderness of the gums came on from the employment of mercurial purges in this disease, the symptoms began to decline, and convalescence was speedily induced. I have seldom, however, administered calomel in any other way in bilious remittent fevers, than in purging doses; nor does it appear to me proper, to push its constitutional operation further than merely to give evidence of its influence by a slight soreness of the mouth.

In obstinate intermittents mercury is a remedy of very great power. I have succeeded in curing cases of this disease in a short time, by the use of calomel so as to affect the mouth, after bark, arsenic, together with bleeding and blistering, had been vigorously and very perseveringly employed without the least advantage. Mercury is particularly applicable to those cases of intermittent fever that are connected with obvious symptoms of visceral disorder, especially obstructions of the liver, spleen, &c.

Calomel has also been much praised by some writers in the cure of typhus fever. Dr. Rush found the pulse becoming full and slow, and succeeded by evident amendment, in typhus mitior, on the supervention of salivation. Dr. Warren, also, observes, that in cases of typhus where the debility had become very great, and in which wine and bark had been ineffectually used, "a few doses of calomel excited the system to action, and the patient began immediately to recover."*

* A view of the Mercurial Practice in Febrile Diseases, p. 17.

But the efficacy of this remedy appears to me more conspicuous in that variety of typhus, which Dr. Armstrong calls the congestive form of the disease. This writer states that he generally gave it in a scruple dose at first, in its early stages, so as to procure full alvine evacuations, and obtain the alterative effects of the medicine as early as possible. It appears, indeed, from the testimony of Chisholm, Johnson, Armstrong, and others, that the specific influence of mercury is peculiarly beneficial in every species of congestive fever. "For a long time," says the latter writer, "I overlooked one of the principal effects of calomel in congestive fevers; and at last it was only forced upon me by patients almost invariably recovering with rapidity, when ptyalism was excited. The power which calomel has in equalizing the circulation, is nowhere more conspicuously displayed than in diseases of a congestive character. Before its exhibition, the skin will be cold, wan, and shrunk, the pulse feeble or oppressed, and the whole system apparently relaxed, but as soon as the mouth is made sore from its influence, the skin becomes warm, reddish, and distended with the vigorous circulation, while the pulse is full, soft, and strong, and the general energy in a great measure restored. The liver is intimately concerned in the pathology of congestive fevers, and for the first day or two the alvine evacuations (from calomel) will commonly be found either as dark as tar, or whitish and slimy; but they speedily become natural when ptyalism takes place, and a copious secretion of bile almost invariably augurs a favourable issue."* In the typhoid fever which prevailed among the blacks in the suburbs of this city, during the preceding two summers, I have seen the good effects of calomel strongly illustrated.

* Armstrong on Typhus, Am. edit. p. 167.

In several cases of this fever, evincing a highly congestive condition of the internal organs, I obtained the most decided advantages from large and frequent doses of calomel. As soon as the gums became sore, the tenderness in the epigastrium, of which they invariably complained, began to decline, and the other symptoms gradually receded.

In the acute phlegmasial fevers, mercury is also a remedy of very considerable importance. It must be observed, however, that it can rarely be given with advantage, or even propriety, in affections of this kind, without the previous or concomitant use of the lancet or other antiphlogistic and depletory measures. With such precautions, it may be resorted to in some of the phlegmasia with very great advantage. In these diseases the calomel should, in general, be given in such doses as to procure its purgative and specific operation, at the same time. "In such affections," says Dr. Armstrong, "the shortest and most certain way of procuring the specific, is through the purgative operation of calomel, for the high excitement resists the agency of calomel, and the intestines are usually so lined with morbid mucus as to prevent its absorption, unless this mucus be brushed away, by purging, from the mouths of the absorbent vessels. One large, or two tolerably free doses of calomel, therefore, may be administered in the day, followed up by some other aperients, to induce plentiful evacuations before bedtime, while to accelerate its more complete absorption during the night, it may be given in divided doses, combined with opium, where there is pain in the chest or belly, or much general irritation." It must also be observed, that ptyalism is excited with much difficulty during the unabated violence of fever; and that while the skin is hot and dry, and the pulse quick or tense,

calomel may be given with freedom, without the fear of producing inordinate affection of the mouth. When, however, the fever is somewhat moderated, calomel must be much more cautiously given, "because, as the system is then verging towards its natural state, its specific action will be more readily induced: and where, during the continuance of the fever it either acts freely on the skin or kidneys, while it keeps the bowels soluble, the practitioner need not be impatient about the appearanee of ptyalism; for the modus operandi of calomel is to equalize the distribution of blood, to restore the natural balance of the circulation by communicating a power to the capillary system of vessels which enables them to resume their secretory offices as before."*

Of the great efficacy of mercury in hepatitis, there can now no longer be any doubt. Its employment in this disease originated in the East Indies, and was introduced into England about the year 1764, by Dr. Robert Hamilton of Lyn Regis.† In the beginning of the acute form of this disease calomel should be given in large doses, with a view principally to its purgative effect, and ought always to be premised and accompanied by bleeding, both general and topical, and epispastics over the region of the liver. When the more violent symptoms of inflammatory excitement are subdued, it will, in general, be highly useful to produce a gentle mercurial action in the system. In the chronic form of this complaint there is no treatment equal to a proper mercurial course. In this, however, as well as in all other chronic affections in which it may be thought proper to give mercury, it should be administered in

* Armstrong on Typhus, p. 338.

† Letter from Dr. Hamilton to Dr. Duncan, in the Medical Commentaries for the year 1783-84, vol. ix. p 191.

minute doses, so as to affect the system very gradually. Dr. Ayre and Dr. Armstrong dwell particularly on the importance of attending to this mode of administering mercury in chronic diseases. In this respect the former of these authors has introduced a very valuable improvement in the use of calomel in chronic affections of the liver.

Mercury has also been much commended for its powers in pulmonary inflammation. Dr. Robert Hamilton, whose paper I have already quoted, states that he employed calomel and opium in peripneumony with astonishing good effect. This combination, he observes, eased the perspiration, promoted the discharge of bronchial mucus, and acted like a charm in allaying the cough and general irritation. He also gave calomel and opium with great advantage in pleuritis, rheumatism, and other inflammatory affections. Dr. John Warren, professor of anatomy and surgery in the University of Cambridge, relates cases of pneumony in which calomel with opium was employed with exceedingly good effects.* From my own experience, I can say nothing of this practice; it is not at all unlikely, however, that after the violence of the inflammatory symptoms have been moderated, opium and calomel in small doses, may be very serviceable. The employment of calomel in cynanche trachealis originated, I believe, with the physicians of this country. We are informed by Dr. John Archer of Maryland, that, in conjunction with polygala seneka, he used calomel freely in this disease. Dr. Rush also placed considerable reliance on the efficacy of this medicine in that species of cynanche trachealis which he denominated the *humid*. He directs it to be given in large doses in the very commencement of the disease, and afterwards in

* A View of the Mercurial Practice in Febrile Diseases, p. 152.

smaller doses until the symptoms disappear. When given in this way, he observes, that the bark is hardly a more certain remedy in intermittents than calomel in this form of croup. Two Scotch physicians, Dr. James Anderson and Dr. Hamilton, both of Edinburgh, have published accounts of their success with this remedy in croup. The former gave calomel to the extent of eighteen grains in twenty-four hours, in doses of two or three grains every hour to children three years old: and he affirms that out of seven cases thus treated, not one died. Some years ago Dr. Stearns of Albany published an interesting paper on the use of very large doses of calomel in this disease. Instructed by the observations of Dr. Stearns, I have since employed a similar practice with much success. Instead of the ordinary emetics, I give from fifteen to twenty grains of calomel to a child from two to five years old, at once; this hardly ever fails to excite copious emesis, and acts at the same time briskly as a cathartic. The nausea and relaxation produced by the calomel, is of much longer continuance, than that which attends the usual emetics. After the inflammatory symptoms of this disease have abated, it sometimes assumes a somewhat chronic character, attended with a dry hoarse cough, and difficult respiration. When the disease acquires this disposition calomel and ipecacuanha in small doses, repeated every three or four hours, is of essential service. It must be confessed, however, that it would be wrong to place any great reliance on this, or any other medicine, in this rapid and dangerous affection, without the concomitant employment of other means, and above all venesection, even to deliquium in very violent cases, as directed by Dr. Ferriar. The quantity of calomel recommended by Dr. Stearns and myself, in this disease, is however nothing when com-

pared to that administered by Dr. Hamilton of Edinburgh. He states that he gave above a hundred grains in twenty-four hours, to a child only two years old; and by this practice he "completely succeeded both in curing the disease and in preventing any shock to the child's constitution, in every case where it was employed previous to the occurrence of the lividness of the lips and other mortal symptoms." I would not, however, recommend so bold a practice as this; but on the contrary regard it as rash and hazardous.

Mercury has also been given in cynanche maligna. Dr. Warren describes a putrid sore throat prevalent at Boston in 1735, in which calomel was freely employed by some practitioners, and, it is stated, with very good effect. "When the disease did not prove fatal on the second or third day, it was almost universally attended with great erosion and excoriation about the fauces, inside of the mouth, lips, and chin, and wherever the saliva lodged; and these parts became covered with a white apthous slough, painful and corrosive. In these cases calomel given freely and liberally was the only medicine which could be depended on to stop the progress of the erosion." In subsequent epidemics, however, this practice was not found equally serviceable. In the scarlatina anginosa, which prevailed in this city in 1783, Dr. Rush gave calomel in small doses in every stage of the disease.

In chronic inflammation of the bronchia, calomel and opium are often of much service. Dr. R. Hamilton greatly extols the powers of this remedy in this affection. Dr. Armstrong, though satisfied of the occasional utility of opium and calomel in chronic bronchitis, speaks, however, with more distrust of its powers in affections of this kind. "Cordially," he says, "as I join in the general and strong commen-

dation of these two agents, preceded by evacuants, in acute inflammations, it is only justice to confess that they have not unfrequently disappointed my expectations in chronic ones; yet where the ordinary measures fail, they certainly deserve a fair trial even in simple inflammation of the bronchia; though the opium should be moderately administered, and mostly along with camphor and antimony."*

Much was at one time said concerning the efficacy of mercury in pulmonary consumption; and a considerable number of cases are reported in the periodical journals both of Europe and this country, in testimony of its utility in this almost hopeless malady. Dr. Samuel Akerly, of New York, in a letter to Dr. Rush, gives an account of four cases of pulmonary consumption which were cured by salivation;† and Dr. Rush himself mentions his success with mercury in this disease. In the fifth volume of the American Medical Recorder, there are three cases related by Dr. John Gloninger, of Lebanon, in which this remedy was successfully resorted to. For my own part, however, I am much inclined to doubt whether mercury has ever been of any real service in genuine tubercular consumption; and it is not improbable, I think, that the cases which have been mentioned as having been cured by this remedy, were of that variety of the disease which has of late attracted considerable attention, and described by Dr. Wilson Philip and others, under the name of "dyspeptic phthisis." This form of consumption is generally preceded by symptoms of indigestion, but particularly those which indicate a disordered state of the hepatic system. "Contrary to what is usual in other species of the disease, the spirits

* Practical Observations on Scarlet Fever, &c., p. 276.
† Coxe's Medical Museum, vol. iii. p. 198.

from the beginning are generally more or less depressed, and the countenance sallow."* The cough is first dry, and comes on in violent fits, commonly after a full meal or on lying down. The matter is generally thrown up in astonishing quantities. There is for the most part but little or no pain felt: if there is any experienced it is usually "a dull pain in the pit of the stomach, or pretty low down in the left side of the chest." The diagnosis of dyspeptic phthisis, says Dr. Philip, does not, however, rest merely on the modification of the symptoms common to all the forms of this disease. There are other symptoms present by which we may generally with little difficulty distinguish this variety of consumption. These symptoms are flatulence, acidity, furred tongue, impaired appetite, and irregular bowels. In this variety of the disease, mercury, with mild tonic remedies, is of primary consequence. It must not, however, be given so as to excite salivation; on the contrary, it ought to be introduced into the system very gradually, and pushed no further than merely to produce a slight tenderness of the gums. One or two grains of the blue pill, with some tonic bitter, may be given once or twice in twenty-four hours. "There is no disease," says Dr. Philip, "in which the advantages of minute doses of mercury are more conspicuous than in this; as the tenderness of the epigastrium abates, and the state of the alvine discharges improve, in by far the majority of cases the pulmonary symptoms gradually disappear."

There can hardly be any doubt of the utility of mercury in incipient phthisis depending upon a syphilitic taint. But even here it is only in the early stage

* A Treatise on Indigestion, by A. P. W. Philip, M. D. p. 300.

of the complaint, that this remedy can be employed with any prospect of success.

Mercury has also been much recommended by some, in the cure of rheumatism, both chronic and acute. In the latter form of the disease, Dr. R. Hamilton employed calomel and opium with much success. The use of calomel in acute rheumatism is, however, certainly a practice of very doubtful efficacy; and unless as a purgative, or in cases occurring in the miasmatic districts, and attended with symptoms of biliary disorder, is but seldom employed in the present practice. In chronic rheumatism mercury is a remedy of acknowledged efficacy. Dr. John Otto, a very intelligent practitioner of this city, in an excellent paper on the cure of chronic rheumatism, published in the Eclectic Repertory,* says, "The result of my experience in the Pennsylvania Hospital is, that every form of chronic rheumatism in almost every instance is removed during the ptyalism, if it be carried to a considerable extent; that the exceptions are very few where there is not permanent relief obtained: and that, in a vast majority of cases, a complete cure is effected if the salivation has been continued actively three or four weeks." Opium is an excellent auxiliary to calomel in this disease; it allays irritation and pain; and prevents it from acting too violently on the bowels, a copious discharge from which is generally injurious in cases of this kind. In that variety of rheumatism which is brought on by imprudent exposure to cold, while under the influence of mercury, our best remedy will, in general, be a second mercurial course. "I have in every case of this kind," says Dr. Scudamore, "seen that all the ordinary methods of treatment are of no avail, or afford only palliative, and very temporary relief; but I

* Vol. ix. p. 530.

have invariably had the satisfaction of witnessing the cure to be effected by resuming a well conducted course of mercury."*

In some varieties of ophthalmia, mercury is a remedy of great powers. Mr. Travers observes, that in certain habits simple ophthalmic inflammation, whether local or constitutional, "becomes worse under the usual depletory measures, the irritability increasing as the strength fails. When this is the case, calomel, opium, and antimony are our best remedies."† Where there is opacity of the cornea, in strumous ophthalmia, "calomel," says the same writer, "or the blue pill, or the oxymuriate of mercury, should be exhibited in combination with opium so as slightly to affect the system. The efficacy of the mercurial remedy mainly depends on its combination with opium." Mercury is no less useful in sclerotitis; but in no form of ophthalmia is this medicine more decidedly beneficial than in choroid and iritic inflammation. After dwelling on the employment and action of mercury in inflammatory diseases of the eye, Mr. Travers observes: "But if any two facts are well established in modern practice, I apprehend they are these:—first, the power of mercury to arrest acute membranous inflammation, both prior to and after the effusion of adhesive matter; and secondly, its power rapidly to remove, by an excitement of the absorbent system peculiar to itself, the newly adhesive matter. If these facts be admitted, then the propriety of its use is indicated in iritis, as in carditis, pleuritis, peritonitis, and the only practical question that can arise respecting it is, how far the patient's strength is equal to support the remedy. There are, I admit, states of the organ as well as of the constitution in

* Scudamore on Gout and Rheumatism, p. 316.

† A Synopsis of the Diseases of the Eye, &c., p. 253.

which it cannot be borne, and no sooner is its influence felt than the inflammation threatens disorganization, and if the plan be persevered in, quickly runs on to it."

By the writers on the diseases of hot climates, mercury has been much recommended as a remedy in dysentery. Cleghorn gave calomel and opium combined in the evening, and a purgative draught in the morning. This, he observed, hardly ever failed to bring off "a prodigious quantity of round, hard, fœtid lumps, to the great relief of the patient." It does not appear, however, that he employed mercury in this disease with a view to its salivant operation. By some of the late writers on the diseases of the East Indies, calomel is more exclusively and confidently recommended in this disease.

Dr. James Johnson gave it in "scruple doses," two, three, or four times a day, and although he admits that "the first stage of dysentery cannot be treated on principles too strictly antiphlogistic, he contends that when the second stage has commenced, or, in other words, when the previous increased action has ended in congestion, nothing can be more useful than to saturate the system with mercury. This mineral does more to resolve irritative fever, to equalize the circulation, disgorge the capillary vessels, restore the balance of the nervous power, and open the sluices of the various healthy secretions and excretions, than any other remedy with which I am acquainted."* This practice, Dr. Robertson observes, is, however, only adapted to tropical climates, "for there the human frame is much less susceptible of the action of mercury, and consequently will bear much larger doses of

* Johnson on the Influence of Tropical Climates, 3d edit. p. 220.

that metal than it would be prudent to prescribe in the climate of England." Dr. Bampfield,* though averse to such Herculean doses of this medicine, speaks nevertheless decidedly in favour of mercurial remedies in this disease, as it occurs in tropical climates. "In my note-book," he observes, "it is stated, that more than fifteen months had elapsed after my arrival in the East Indies, before one fatal case occurred in the course of which ptyalism had been fully induced and supported." In the inflammatory form of this disease, calomel should not be given with a view to its specific effects, until the high febrile excitement be previously moderated by bleeding, purging, and other antiphlogistic measures. When this has been effected, calomel, Dr. Bampfield observes, may be resorted to with various and very important intentions:—"as a cathartic to empty the intestines of their fæces, and to excite an increased secretion from the healthy portions of the mucous membrane; to emulge the portal circle; to excite the salivary glands; and, which is the most important as a general stimulus to the system, to excite increased secretions generally, and a mercurial fever or irritation that supersedes inflammatory actions." There are other writers besides those already mentioned, who speak equally strong in favour of very large doses of mercury in tropical dysentery. In the dysenteries of the middle latitudes, mercury requires a much more cautious use. After the inflammatory excitement is moderated, and there exists much intestinal irritation, with a dry and hot skin, there is no remedy better calculated to afford relief than calomel, ipecacuanha, and opium. Except, however, in the chronic form of the disease, I have seldom found it necessary to excite ptyalism. A slight affection of the mouth

* On Tropical or Scorbutic Dysentery, p. 135.

has, in general, been sufficient in my practice to afford relief.

In diarrhœa, calomel judiciously managed, is a remedy of great efficacy. In minute doses it allays morbid intestinal irritation more readily than any remedy we possess. Dr. Ayre, of Hull, in his very excellent treatise on marasmus, has fully set forth the value of small doses of calomel in this and other similar intestinal affections. I can myself speak with much confidence of this practice. Within the last three years I have relied almost exclusively on minute doses of calomel in the treatment of this complaint, and I do not remember of having been disappointed, in a single instance, in putting a stop to it. I commonly give one-fifth or fourth of a grain of calomel with an equal quantity of opium, every two, three, or four hours, according to the urgency of the symptoms. The use of minute doses of calomel is very strongly recommended by Dr. Ayre, in cholera. In that variety of this complaint which is peculiar to infants, I have been for several seasons past much in the habit of giving small doses of this remedy; and I have had reason to be pleased with its effects. I usually give from one-eighth to one-fourth of a grain with three or four grains of prepared chalk, every hour or two; I do not, however, rely exclusively on this remedy, but always direct the occasional use of the warm bath and rubefacient remedies to the surface. The late Dr. Miller, of New York, mentioned the efficacy of this practice in cholera long before the appearance of Dr. Ayre's book, to whom the credit of having first employed the remedy in this way is now commonly ascribed. To Dr. Ayre, however, we are indebted for a very ample and interesting view of the usefulness of this practice. In the cholera of adults he gave from one-sixth to one-third of a

grain of calomel every half hour; and he relates a number of cases which were speedily relieved by this treatment.

Colica pictonum is another disease in which the efficacy of mercury appears to be well established. So thoroughly, indeed, am I satisfied of the utility of this practice, that I rely entirely on large doses of calomel and opium, together with bleeding, where the arterial excitement is vehement. I do not remember a single instance in which the bowels did not really give way to the action of an ordinary cathartic, as soon as the mouth became affected by the mercury. For the more chronic effects of the poison of lead which show themselves in paralysis of the wrists, shooting pains through the abdomen, pale and haggard countenance, &c., there is certainly no remedy equal to mercury, given to the extent of exciting salivation. Dr. Clutterbuck, in his excellent work on the deleterious effects of lead, places the utility of this practice in a very strong light.

In dyspepsia, when, from long continuance, functional disorder of the liver is induced, mercury, judiciously administered, is a remedy of very great consequence. The blue pill, in doses of four or five grains in the evening, and aided by occasional mild laxatives, tonic bitters, and a proper diet, will, in general, act very beneficially. Here, however, salivation is to be carefully avoided; the slightest affection of the mouth, so as to give evidence of the alterative influence of the medicine, is all that is requisite from mercury in this complaint.*

Being closely connected with indigestion, hypochondriasis may here be mentioned as a disease sometimes considerably benefitted by mercurial remedies. Given as a purgative in conjunction with other cathartic

* Wilson Philip on Indigestion.

remedies, it does much good in this disease by exciting the healthy action of the liver, invigorating the portal circulation, and emulging the biliary vessels. With these intentions, the following pill may be used to much advantage.* This cathartic generally produces large bilious evacuations, frequently of the consistence and colour of tar, and which are almost invariably followed by great relief to the distressing hypochrondriac symptoms.

A good deal has been said both in Europe and in this country concerning the efficacy of mercury in the cure of mania. Dr. Rush frequently employed salivation in mental diseases in the Pennsylvania Hospital, and occasionally with much advantage. "Too much," he observes, "cannot be said in its favour in general madness." At present mercury is much less resorted to in mania than it was formerly. It is, however, a remedy well worthy of attention in the treatment of this disease; more especially in those cases which depend on, or at least are intimately connected with, deranged function of the hepatic system† or alimentary canal. . .

Mercury has also been successfully used in tetanus. Dr. Rush cured a case of this disease in the Pennsylvania Hospital, by salivation, aided by bark and wine. Walthers, a German writer, says a great deal in favour of salivation in this disease.‡ Munro also gave mercury successfully in tetanus; and Dr. Joseph Klapp of this city has reported a case of this disease in which

* Extract. colocynth. comp. ʒi. calomel gr. xv. antim. tart. gr. ii. ol. carui gtt. v. M. ft. In pil. xxiv. dividend. cap. ii. vel. iii. quaque nocte. This pill is much praised by Drs. Johnson and Scudamore, in hepatic disorders.

† Kæmpff, Hufeland, Prost, Burrows, Pinel, &c.

‡ Walthers' Observations on the Curative Powers of Mercury in Tetanus. Abhandlungen aus dem gebiete der Pr. Med. B, i. s. 166.

salivation, with the cold bath, effected a cure. Mercury has often been given in conjunction with opium in this disease. Dr. Odier of Geneva, says, that he has known these agents, given in very large doses, to produce very good effects in tetanus.* Mercury is supposed to be more efficacious in idiopathic tetanus, than in that variety which proceeds from mechanical injuries. It is doubtful, however, whether any real distinction exists in the essential character of idiopathic or symptomatic tetanus, and I am inclined to believe, with Dr. Morrison, who has lately published a treatise on tetanus, that the general treatment, in these varieties of the disease, cannot be distinct. Dr. Morrison observes, that spontaneous salivation has not unfrequently been noticed "in tetanic patients, where cases terminated favourably, and hence probably the first idea of using mercury."† "I have undoubtedly had many examples," says this writer, "of the good effects of mercury in the cure of this disease. Four grains of calomel given two or three times a day, with three or four drachms of the ointment well rubbed on the neck and spine night and morning, I believe to be an excellent practice. A much larger quantity of ointment may be used on different parts of the body: indeed the more continued the friction, the better." Dr. Clark advises a slight mercurial salivation, after wounds in hot climates, as a means of preventing the occurrence of this disease.

Of the remediate powers of mercury in hydrophobia, nothing can be said calculated to excite any well grounded hopes. It is true, it has been confidently recommended by many writers of great eminence in the

* Manuel de Medicine Pratique, p. 189.

† Johnson on the Influence of Tropical Climates, p. 474.

profession.* Bonel† even states that he cured five hundred hydrophobic patients by mercury. This is quite equal to the reports that have been recently published concerning the powers of scutellaria in this disease, and deserves not the least credit. Unfortunately we know as yet of no remedy or course of treatment which holds out even a ray of hope in this dreadful malady. The immediate excision of the part bitten by the rabid animal is undoubtedly the most promising mode of preventing the occurrence of the disease. But to be effectual it should be done directly after the bite is inflicted; by this means we may prevent the absorption of the virus, and the consequent evolution of the disease. Dr. Chapman says: "I am thoroughly persuaded that the extirpation of the part, at any period prior to the accession of the attack, would prove as effectual as if it had been done when the bite was originally inflicted." This persuasion, however, does not appear to be founded upon any experience, but derived solely from his speculative views concerning the modus operandi of the hydrophobic virus, which, according to his notions, is by the poison exciting a train of "associated motions, the primary link of which commences at the original seat of irritation." By breaking this train of morbid actions, at any time anterior to the full development of the disease, he thinks we shall be able to prevent its full formation. It may be observed, however, that although the primary link of such a train of morbid actions be destroyed, yet the consecutive ones being already formed, would still remain and progress to their ultimate point. But speculation apart, we know from direct experiment that the extirpation of

* Portal, Johnson, Astruc, Desault, Sauvages, Haag, Cheyne, Walthers, Kaltschmidt, and others.

† Burdach's Arzneimittellehre, B. ii. p. 268.

the bitten part has failed in preventing the accession of the disease. Dr. Hosack mentions a case of this kind.*

In dysphagia mercury has been known to produce very good effects. Dr. Munkley† relates a remarkable case of dysphagia in which the remedy was successfully employed. The patient, a woman about forty years old, complained of an inability to swallow; whatever she attempted to swallow, after staying some time in her throat, was thrown up again, by what appeared from her description a kind of convulsive motion of the œsophagus. She could swallow nothing but very liquid diet, and this only in very small quantity. A gentle salivation, continued for about six weeks, cured her effectually. The writer alludes to other cases of this kind, in which mercury was successfully used. "The only medicine," he says, "from the use of which I have ever found any service in this complaint is mercury; and in cases which are recent, and where the symptoms have not risen to any great height, small doses of mercury given every night, and prevented by purgative medicines from affecting the mouth, have accomplished the cure; but where the complaint has been of long standing, and the symptom has come on of the food's being returned into the mouth, in the manner above described, a more powerful method of treatment becomes necessary. In this case I have never found any thing of the least avail in removing any of the symptoms, but mercury used in such a manner as to raise a gentle but constant spitting."

Dr. Thomas Percival also relates a case of difficult deglutition, in which mercury, together with bark and

* Thatcher on Hydrophobia.

† Medical Transactions of the London College of Physicians, vol. i. p. 172.

antispasmodics effected a cure.* There are other writers who speak of their success with this remedy in dysphagia.

Many authors† speak very highly of the powers of mercury in gutta serena. It is said to be particularly serviceable in those cases which are connected with internal ophthalmic inflammation, and in which, therefore, the pupil is in a very contracted state. Mr. Ware strongly recommends mercury in cases of this kind; and Mr. Stevenson observes, that it may be exhibited with much advantage during the active stage of the disease, "so as to produce an early constitutional effect, for it will tend not only to alter the morbid action of the vessels, but will serve likewise, after the inflammatory symptoms have subsided, to promote the absorption of any lymph that may have been effused during the preceding violent vascular excitement."‡ In the chronic form of this disease, mercury may be useful by removing visceral obstructions, which are not unfrequently the primary source of this affection.

In dropsy, mercury is a remedy of acknowledged efficacy. I have already spoken of the modus operandi of this remedy in hydropic diseases, when treating of the Diuretics, and shall not therefore in this place say any thing further on this point. In union with squills, calomel given so as slightly to affect the mouth, generally acts with great efficacy in hydrothorax. When squills are inactive as a diuretic, as is sometimes the case, the addition of a grain of calomel every night until the salivary glands become affected, very com-

* Medical Transactions of the London College of Physicians, vol. ii. p. 90.

† Bisbane, Kock, &c.

‡ Stevenson on Amaurosis, p. 208.

monly determines it to produce a copious diuresis.* In exhibiting mercury in dropsy, it is of much consequence to attend to those circumstances which experience has pointed out as being favourable or opposed to its remediate operation. Thus it is stated by Maclean, Blackall, and others, that "some firmness of the general habit," is to be regarded as a favourable circumstance to the action of mercury in dropsical affections. On the contrary, as Dr. Blackall observes, "if the habit is so depraved that the coagulable part of the blood already passes off by the kidneys, the operation of this mineral is obviously very equivocal and hazardous." This corresponds with the observation of other writers, and my own practice has furnished me with several very striking instances of the injurious effects of mercurial remedies in dropsy attended with a depraved and scorbutic habit of body. In cases of dropsy attended with visceral obstructions, particularly those of the liver, mercury will in general prove very serviceable. In dropsies of this kind the urine is commonly very thick, and highly charged with bile and uric acid.

The utility of mercury in hydrocephalus is often very considerable. Percival, Dobson, Rush, Cheyne, and other writers mention cases of this disease which were successfully treated by this remedy. "When the existence of the complaint becomes probable," says Cheyne, "there ought to be no other delay than that occasioned by our endeavour to subdue the disorder in the bowels, in commencing the mercurial course, which it must be allowed has cured hydrocephalus even when far advanced."† He gives an account of two cases in which the efficacy of mercury is put in a

* Blackall on Dropsies, p. 44.

† Cheyne on Hydrocephalus, p. 96.

very strong light. It is to be observed, however, that bleeding, both local and general, with purging and blistering, ought never to be omitted as collateral and very important resources. Calomel may at first be given as freely as the stomach will bear, with a view to its purgative effects; when the bowels are once thoroughly evacuated, it ought to be given in small and frequent doses, and employed at the same time externally by frictions. By a course of this kind I have in a few instances succeeded in recovering patients from what I conceived to be hydrocephalus, after they appeared to be in almost a hopeless state. It must be confessed, however, that there is some reason to suspect that other diseases of children, particularly the infantile remittent fever, and mere cephalic congestion from abdominal irritation, connected with fever, are not unfrequently mistaken for genuine hydrocephalic disease; and it may thus be that some of the cases of this disease which are stated to have been cured by this and other remedies, were in reality not hydrocephalus, but other affections connected with inordinate determinations to the vessels of the brain.* Dr. Underwood and Dr. Blackall say nothing in favour of this remedy in the treatment of hydrocephalus. The weight of testimony is, however, decidedly in favour of its good effects in this disease.

The first employment of mercury as a remedy, was as an external application in cutaneous diseases, and it remains to this day one of our most efficacious means in many of these complaints. It is particularly useful in some of the varieties of scabies, prurigo, and porrigo.

* Dr. Coindet has directed the attention of the profession to a particular aspect of the urine, especially to a micaceous deposition like crystals of boracic acid, and which he believes to be urea. The appearance, he says, is almost peculiar to hydrocephalus, and takes place in the second stage.

Internally given, it is seldom of any service in these diseases, but some of them yield very readily to its external employment. The itch is commonly cured without difficulty by mercurial ointment; and in the prurigo podicis, an affection attacking the anus and scrotum, and attended with intolerable itching and stinging, the unguentum hydrargyri nitratis diluted, is the most efficacious remedy we possess. In another variety of local prurigo, the prurigo pudendi muliebris, affecting the pudenda of women, and occasioning an excessive and insufferable itching about these parts, there is no application more effectual than a solution of muriate of mercury in lime-water, in the proportion of two grains to an ounce of the latter.* Mercury has also been recommended in leprosy and elephantiasis, but it does not appear that its efficacy in these complaints is entitled to much attention.

Scrofula is a disease in which the powers of mercury have been very variously represented. That this remedy is capable of doing much good in the present disease, when judiciously administered, is pretty generally admitted; but its imprudent employment, in the advanced stages of the complaint, is often followed by very bad effects. As a general remedy to correct disorder of the chylopoietic organs, mercury, given in alterative doses, generally acts with decided advantage in the early stages of this disease. "The means," says Dr. Lloyd,† "that I would make use of for the accomplishment of this point are the following: if the patient be an adult, and the bowels obstinately confined, I would give him five grains of the blue pill every night, and half a pint of decoct. sarsa. comp. twice a

* Bateman's Practical Synopsis on Cutaneous Diseases.

† A Treatise on the Nature and Treatment of Scrofula. Lond. 1821, p. 29.

day." Copious purging, observes this writer, ought to be carefully avoided; "we should," he says, "particularly avoid large purgative doses of calomel, as I am convinced they often produce more general irritation than the evacuation they occasion from the bowels is able to relieve." He recommends the exhibition of alterative doses of this remedy until the symptoms of hepatic and intestinal disorder, if any exist, be removed.

I have seen very good effects from the employment of muriate of mercury and cicuta, given conjointly in this disease. In several instances, however, where this remedy had removed extensive scrofulous ulcerations, I have known, after some time, the local disease to reappear, and to go on with greater rapidity than at any time previously.

Mr. Abernethy, in his invaluable work on the constitutional treatment of local affections, has given much interesting information concerning the remediate powers of alterative doses of mercury in diseases of this kind. Various diseases, too, of an anomalous character, depending on functional disorder of the hepatic system, are often entirely under the control of mercurial remedies. For much interesting and important instruction on this subject, the reader is referred to the works of Drs. Abernethy, Ayre, and Wilson Philip.

I come now, in the last place, to say something concerning the use of mercury in venereal affections.

Soon after this disease was known in Europe, mercury was employed as a remedy for its cure; and although it had at various periods to encounter much opposition, the experience of the most eminent of the profession in different parts of the world, gradually established its reputation in this respect, and it became at last almost exclusively relied on in the treatment of this disease.

Within the last ten or twelve years, however, its remediate powers in this disease have been again called into question, and we are told, that both the primary and secondary symptoms of venereal affections disappear under the employment of simple dressings and vegetable decoctions, without the use of mercurial remedies.

Dr. Ferguson, one of the medical officers of the British army, during the late war on the continent, observed that the surgeons of the Portuguese and German regiments treated their venereal patients without mercury, and that the disease got well under the employment of the simplest remedies. Mr. Guthrie and Mr. Rose, too, in the year 1815, made a number of experiments on this subject in the military hospitals of England, and in 1816, Dr. Hennen, deputy inspector of hospitals, and professor Thompson, of Edinburgh, instituted a course of experimental inquiries on the same subject. From these experiments it would appear, "that all sores on the sexual parts may be healed without mercury in any form whatever; that where that medicine has not been used, secondary symptoms do not appear in a larger proportion than one in ten; that such symptoms are of a milder nature than similar ones occurring after the use of mercury, and that those secondary symptoms gradually cease, under the very simple treatment of confinement in bed, quiet, and a vegetable diet."

Some, indeed, allege, that mercury is not only unnecessary in the majority of venereal complaints, but extremely injurious in its effects, being apt, as it is said, to bring on tedious and dangerous constitutional affections,—swellings and caries of the bones, cutaneous eruptions, ulcerations, pain, debility, emaciation, &c. That mercury incautiously given, or the imprudent conduct of patients with regard to diet, drink,

exposure, &c. while under the influence of this remedy, will often produce very serious consequences, is quite certain, but, it should be always recollected, that the abuse of a thing is no argument against the utility of its cautious and seasonable use; and that the most valuable remedies are readily converted into dangerous poisons by improper management. "I am ready to grant," says Dr. Curry, "that like antimony, opium, and every other active remedy, mercury would do little good if it were not also capable of doing some harm. The knife and the caustic are unquestionably powerful, and in so far may they be made dangerous instruments; but who ever blames the surgeon for employing a sharp knife or an active caustic, seeing that both the one and the other are to be directed by his eye, and guided by his hand?"*

It would indeed appear extremely probable, that the cutaneous eruptions, ulcers, caries, nodes, &c. supposed by some to be so often the result of the use of mercury in venereal cases, do in fact depend on a different cause, since it must be confessed, that in other diseases, as for instance hepatitis, &c. no such consequences follow the use of this remedy, however long continued or largely given. "I beg leave to observe," says Mr. Carmichael, "that I have not, nor do I believe that any other person has, witnessed ulcers on the skin and throat, and nodes on the bones, from the exhibition of the most extensive courses of mercury in any other than venereal diseases, nor even an eruption, except the well known mercurial eczema."†

We have, too, the concurrent testimony of some of the ablest physicians, and who have been most exten-

* Curry's Examination of the Popular Prejudices against Mercury, p. 40.

† Edinburgh Medical and Surgical Journal, vol xi. p. 436.

sively engaged in the treatment of this disease, in favour, not only of the superior remediate powers of mercury in syphilitic affections, but of the perfect safety of its employment under prudent management. "My opportunities of administering mercury," says Dr. Pearson, "have extended to no less than *twenty thousand cases*, and I feel myself fully authorized to assert, that it is a remedy always to be confided in under every form of lues venerea; and when we have only this one disease to contend with, that it is a certain antidote, and as safe in its operation as any other active medicine drawn from the vegetable or mineral kingdom."* Dr. Ballingall, in a most excellent little work on syphilis, observes: "When I reflect upon some thousand cases, both of syphilis and liver disease, in which I have employed mercury, with a hand perhaps too unsparing, and when I think of the health which many of my patients have afterwards enjoyed, I cannot believe that there is any great proportion of human constitutions upon which this medicine exerts the deleterious effects which have been lately ascribed to it." Even Mathias, who has written expressly on the diseases produced by mercury, observes, "when this mineral is administered with prudential reserve, and with discreet knowledge, its effects are blessed, safe, efficacious, and permanent."†

My own limited experience in this disease does not permit me to speak very confidently as to the comparative merits of the mercurial and non-mercurial practice. I have, however, never omitted using mercury in any case, whether of local or constitutional syphilis, and in very few instances have I known con-

* On the Effects of various Articles for the Cure of Lues Venerea, p. 114.

† Mathias on the Mercurial Disease.

stitutional symptoms to come on after the employment of this remedy.

It is not my intention, however, to enter into any particular account of the mercurial treatment of syphilis. Those who wish to gain proper information on this subject will not seek it in works on the materia medica. It will nevertheless be proper, in this place, to mention the means that ought to be adopted as precautionary measures against the morbid effects of mercury when exhibited in this and other diseases. With this view I shall quote the following rules from Dr. Hamilton's work on the use and abuse of mercurial remedies, as they appear to me to be highly important, and by far too much neglected by practitioners generally.

"The first precaution to be adopted in this climate, during a course of mercury, is confinement within doors, with a regulated temperature of the apartment.

"Secondly.—The diet ought to consist of the mildest possible food, such as preparations of milk and farinaceous matters, with weak animal mucilages. In short, all stimulant food, or drink of every description, ought to be most scrupulously refrained from.

"Thirdly.—If the individual be robust, sixteen or twenty ounces of blood should be drawn from the arm before any preparation of mercury be exhibited. Where, from the delicacy of the patient, blood-letting cannot be advised, confinement within doors, and low diet, should be persevered in for at least a week previous to beginning the mercury, and during that time one or more doses of cooling physic ought to be taken.

"Fourthly.—The mercury ought not to be given in such quantity, or with such activity, as to produce a sudden effect upon the system. This is certainly one of the most important practical improvements, suggested

by Abernethy and others, and confirmed by the late experiments; for irreparable mischief was often committed by the hurry with which the system was loaded with mercury. If the other precautions be implicitly adopted, the more slowly the mercury is administered, the more certainly, and perhaps speedily, will the primary sores heal.

"Fifthly.—Salivation is to be guarded against, by lessening the dose or suspending the medicine, wherever the brassy taste in the mouth is perceived. The same measures are to be pursued, if any irritation of the bowels threaten.

"Sixthly.—Some vegetable diluent ought to be drank in large quantities. The decoctions of sarsaparilla, guaiac, sassafras, &c., answer this purpose.

"Seventhly.—The daily use of the warm bath, where that can be conveniently commanded, is found particularly serviceable.

"Eighthly.—If any irritable feelings occur while under the influence of mercury, the use of the medicine should be instantly suspended, and the most active measures for checking the progress of such complaints ought to be carefully employed. Preparations of camphor, of the spiritus ammoniæ aromaticus, of opium, of cicuta, &c. are severally useful, according to the circumstances of such cases.

"Ninthly.—After the mercurial course is finished, the patient ought to remain within doors for at least a fortnight, improving the diet (though still abstaining from wine and stimulating liquors,) and taking gentle exercise, progressively increasing it according to the return of strength."

It must be confessed, indeed, that thousands have been treated successfully with mercury, without the observance of, perhaps, any of the above precautionary

measures. It can, however, hardly be doubted that the neglect of these rules has often been the occasion of much mischief, and that if they were more commonly attended to than they appear to be, we should hear much less of the disastrous consequences of the employment of this remedy than we at present do.

OF THE MERCURIAL PREPARATIONS.

Mercury, as has already been stated, does not appear to possess any medicinal properties in its metallic state. Taken into the stomach, however, it readily passes through the intestinal canal, by its gravity; and is on this account sometimes given to force a passage in obstinate obstructions of the bowels.

It is very frequently found adulterated, either by lead, bismuth, tin, or zinc. "Its impurity is at once indicated by its dull aspect; by its tarnishing and becoming covered with a gray film; by its diminished mobility, in consequence of which its globules are unable to retain the spherical form, and therefore *tail*, as it is technically expressed. Lead is discovered by dissolving it in nitric acid, and adding to the solution water impregnated with sulphuretted hydrogen, when, if lead be present, a dark brown precipitate will ensue; bismuth, by pouring the nitric solution into distilled water, when it will appear as a white precipitate; zinc, by exposing the mercury to heat; tin is detected by a dilute solution of nitro-muriate of gold, which throws down a purple precipitate."*

Mercury is susceptible of a very great variety of

* Paris's Pharmacologia.

pharmaceutical and chemical preparations, the mildest and simplest of which are those which are formed by triturating this metal with mucilaginous, oily, or farinaceous substances. By this process it is divided into exceedingly minute particles, a small portion of which become oxydized, and thus rendered active as a remedy.

PILULÆ HYDRARGYRI.—BLUE PILL.

These pills are made by rubbing mercury with viscid substances, until the globules disappear, and the metal assumes the state of a black oxide. The conserve of roses is commonly employed for this purpose, but objections have been made against it on account of its astringency, which Swediaur thinks weakens the powers of the mercury. Mr. Abernethy observes, that the blue pill is uncertain in its operation, and he seems to think that this may depend on the sulphuric acid, which, it appears, is not unfrequently found to exist in the conserve of roses. "It is not improbable," observes Dr. Paris, "that, in making the conserve for sale, some of this acid may be added to brighten the colour; and if so, the mercurial pill which is made from it may contain, in varying portions, some of that highly deleterious compound, the subsulphate of mercury." Four grains of the pill, made according to the London and Dublin Pharmacopœia, contain one grain of quicksilver. When we wish to exhibit mercury in this way, and the form of pill is objectionable, it may be very conveniently given in the form of Plenck's mercurial mixture, which consists of a suspension of the quicksilver in a solution of gum arabic. Plenck's directions for making this mixture are, to triturate together in a stone mortar one drachm of pure mercury and two drachms of the gum, gradually adding

water till the globules are entirely extinguished; half an ounce of syrup and eight ounces of water is then to be added to it. The dose of this is two tablespoonfuls, every morning and evening. A part of the quicksilver falls to the bottom, but readily unites again with the water by shaking.

The blue pill is the mildest preparation of mercury we possess; and, in certain diseases or states of the system, is preferable to any of the other mercurial remedies. In general, where we wish to produce a very gradual and gentle mercurial impression, and where the bowels are easily excited into action, the blue pill is an excellent form of employing mercury. There are peculiar constitutions, however, in which this pill is so oppressive that it cannot be taken without great disturbance. "It is remarkable," observes Dr. Wilson Philip, "that the blue pill is so offensive to some constitutions, that I have seen several instances in which it disordered the secretion of bile, even when it was healthy at the time of its exhibition; and in such cases, as far as I have observed, the disordered state of the bile continues as long as it is used."* This, however, is of very rare occurrence; and, as a general rule, we have no remedy which is preferable to, or perhaps even so suitable as the blue pill, wherever it is our intention to rectify the functions of the liver or chylopoietic organs. As an alterative, too, in the treatment of local diseases, kept up by constitutional causes, this pill, as directed by Abernethy, is in general the best form of employing mercury. When it is exhibited as an alterative, it may be given in doses of from four to six grains once or twice a day. Administered in doses of from gr. x. to ℈i. it commonly acts as a gentle laxative.

* Treatise on Indigestion, p. 204.

℞.—Mass. pil. hydrarg. ʒss.
G. aloes gr. x.
Tart. antimonii gr. i.—M. Divide into ten pills. One to be taken at night on going to bed, in chronic affections, attended with costiveness and derangement of the biliary organs.

UNGUENTUM HYDRARGYRI.

The mercurial ointment is a most important remediate article, and as it requires much time and labour to prepare it by the ordinary processes in use, pharmaceutists have resorted to a great variety of expedients to facilitate its preparations. In an excellent paper on the preparation of mercurial ointment, by Dr. P. K. Rogers, professor of chemistry at William and Mary's College, Virginia,* he gives the following expeditious process, among several others, for preparing this ointment: "Take an ounce of raw linseed oil, which has been long exposed to the air, and half an ounce of tallow to every pound of metal. First, divide the mercury by triturating it with the oil for one minute; then add the tallow, and triturate for one minute more; lastly, add the proper proportion of suet and lard to make an ointment, and rub the whole for three minutes. A mercurial ointment, inodorous, of a deep blue colour, and perfectly bland, yet active, may thus be prepared in five minutes." Mr. Planche† recommends the oil of eggs as the most useful substance to abridge the labour of making the mercurial ointment. "When mercury is triturated with oil of eggs," says the editors of the London Medical Repository, "which has been kept for some months, although it have no disagreeable odour, the metal in a few minutes spreads over the

* American Medical Recorder, vol. ii. p. 235.
† Journal de Pharmacie, for 1815.

sides of the mortar in a thin layer resembling the amalgam on a looking-glass; in a few minutes longer all the globules disappear, and after adding the lard and suet, the whole operation, which requires the labour of several days by the usual method, is completed in an hour."* Turpentine is very commonly employed to expedite the preparation of this ointment, but it is very objectionable, on account of its rendering the ointment irritating, and apt, when rubbed on the skin, to produce "either painful excoriations or a fiery efflorescence, or a crop of small corymbose tubercles, which require the remedy to be discontinued." It appears from the researches of Mr. Donavan,† that the mercury exists in two different conditions in the officinal ointment; in its metallic state, mechanically mixed, and in the state of an oxide, combined chemically with the lard, "and that the medicinal activity of the ointment resides exclusively in this latter portion, the presence of metallic mercury not only being useless, but injurious, by obstructing the absorption of the active compound of the oxide." This gentleman has accordingly introduced a very important improvement in the preparation of mercurial ointment, by directing it to be made with the black oxide of mercury and lard, and combining them chemically, by agitating them together for two hours, at the temperature of about 350° Fahren-

* The oil of eggs can be most readily procured by the following method: "Let any quantity of the yelks of fresh eggs be put into a silver or glass vessel, and dried by the heat of a water bath until the oil can be expressed from the mass in the hand. Put this into a cloth bag, and press it strongly between two plates of pewter, warmed in boiling water. The oil, thrown upon a filter, in a funnel heated by steam, will then pass through perfectly clear." The analysis of one hundred parts of oil of eggs, according to M. Planche, yielded ninety-one parts of pure animal oil, and nine of suet.—*Dykeman's Dispensatory*, p. 711.

† Thompson's Annals of Philosophy, for October, 1819.

heit.* Every ounce of lard, when thus prepared, contains twenty-one grains of the black oxide. Mr. Donavan tried the effects of this ointment on several persons, and found it as efficient as the officinal ointment, which contains nearly twelve times as much mercury; and it can be rubbed in completely, in less than one-third the time required for this purpose when using the common ointment. The use of this new ointment is neat and cleanly, soiling the skin but very little; and where privacy is an object, this is of great consequence. It is also much more economical, and may be prepared with much less labour than is requisite for the preparation of the common mercurial ointment. "I consider this discovery," says Dr. Mease,† "with that of dissolving magnesia in aeriated water, as two of the most useful modern additions to our previous stock of pharmaceutic knowledge."

This ointment, applied by friction to the surface of the body, produces the same general effects as when mercury is given internally. It in general, however, more promptly excites salivation than any other mode of administering this remedy; and it is also much less apt to weaken the alimentary canal than the other

* "The oxide may be procured by decomposing calomel by a solution of pure potass, or by pouring a solution of the nitrate of mercury into a caustic alkaline solution: this oxide should be at first triturated with a little lard, in the cold, to make the penetration complete, taking care that the lard be quite free from common salt, or else calomel will be the ultimate result; the mixture is now to be submitted to the action of heat, and it is very important to attend to the necessary temperature, for at 212° the oxide and lard will not unite; at 600° the oxide will be decomposed and the mercury volatilized; at 500° and 400° the oxide is partially decomposed, some red oxide being formed and mercury reduced; the proper temperature is between 300° and 320°, at which it should be maintained for an hour, and the ointment should be stirred until cold."—*Paris's Pharmacologia.*

† In the Medical Recorder, vol. iii. p. 512.

mercurial preparations usually employed internally. In very irritable and weakly persons, however, I have known mercurial frictions to produce colic and diarrhœa, and much disturbance of the digestive organs. According to Mr. John Hunter, mercurial inunction is always to be preferred to the internal employment of this remedy, inasmuch as the skin is much less essential to life than the stomach, and is therefore capable of bearing much stronger impressions than this latter organ. Be this as it may, it is very certain that all the purposes for which a general mercurial influence may be requisite, are to be well answered by this ointment. Inunction is commonly performed by rubbing in from two to three ounces on the inner surface of the thighs, or on some other part where the cuticle is delicate. Where a prompt and efficient impression is required, the quantity of the ointment rubbed in, as well as the extent of the surface to which it is applied, may, however, be greatly augmented.

Besides the diseases, in which mercurial ointment is serviceable, in common with the other mercurial preparations, there are some affections in which its remediate powers appear to be particularly useful. In the treatment of erysipelas, it would appear to be a very valuable remedy. Dr. Dean, of Chambersburg, in this state, was the first who made its virtues in this respect, publicly known. It appears from the testimony of this gentleman, and of Dr. Lyttle, that the efficacy of this ointment in erysipelas is very considerable. In conjunction with depletory measures, the application of the ointment to the affected part, generally in a short time relieves the burning pain, heat, and itching of the inflammation.

"Among the various local remedies," says Dr. Dean, "that have been recommended in this disease, and

which I have had an opportunity of trying, there are none, I am inclined to think, superior to the strong mercurial ointment. The trials which have been made with it in this part of the country, have also obtained for the ointment the confidence of some of our most respectable physicians."*

Dr. Dean also speaks of "an obstinate and troublesome disease of the ears," for which he found the mercurial ointment an excellent remedy. It consists of a severe and painful itching in the meatus auditorius, and is attended with continual "beating and ringing in the ears, and at times with a thin acrid discharge, which excoriates and inflames the parts over which it flows." The ointment must be applied to a cotton or woolen tent and introduced into the ear.

For the reduction of venereal buboes, it is the most useful remedy we possess. Lentin observes, that both in acute and chronic rheumatic pains, mercurial ointment, mixed with an equal portion of camphor ointment, is a very valuable local application.

HYDRARGYRI CHLORIDUM CORROSIVUM.—HYDRARGYRI OXYMURIAS.—CORROSIVE SUBLIMATE.—CHLORIDE OF MERCURY.

This is a white crystalline mass, diaphanous when recently prepared, without odour, and of an exceedingly acrid and stiptic taste.

According to some chemists, it is composed of eighty-two parts of oxide of quicksilver, and eighteen of muriatic acid. Agreeably to the latest views, however, it consists of one proportional of mercury, and two of chlorine, constituting a *bi-chloride* of mercury. It dissolves in eleven parts of cold, and in three of

* American Medical Recorder, vol. iii. 503.

boiling water. It is also readily soluble in alcohol and æther. This latter liquid "has the curious property of abstracting it from its solution in water, when agitated with it." The addition of a few drops of rectified spirit or of muriatic acid greatly facilitates its solution in water.*

Given in small doses, one-fourth of a grain for instance, its effects are those of mercury in general. It is, however, much less apt to excite salivation than most of the other mercurial preparations, and has a tendency rather to increase the perspiration and urine. It is said to be more mild in its operation in cold than in warm latitudes.† If it be taken in larger doses, as from a half to a whole grain, its immediate effects are more violent, producing pain in the stomach, nausea, vomiting, anxiety, and palpitation. In still larger doses, it produces burning heat and blisters in the mouth, throat, and stomach, excruciating colic pains, a continued violent vomiting of frothy mucus, mixed with blood, purging, intolerable thirst, and internal heat, tremors, tetanus, paralysis, cold sweat, syncope, swelling of the face, mania, and finally death. It sometimes produces violent strangury and aphonia. On opening the bodies of such as have died from the effects of this substance, the mucous coat of the stomach and bowels is found extensively inflamed, abraded, and covered with gangrenous spots. According to Orfila, corrosive sublimate, on being mixed with albumen, gluten, milk, animal broth, or bile, forms a precipitate, which consists of oxymuriate of mercury and animal matter. He accordingly recommends these substances, particularly the white of eggs, as the most effectual remedies we have, in cases of poisoning from

* Paris's Pharmacologia.

† Burdach, Arzneimittellehre, Band. ii. s. 360.

corrosive sublimate. The vegetable gluten of wheat flour is said to be equally efficacious with the white of eggs. The flour is to be administered in substance mixed with water.

Corrosive sublimate, by cautious management, is a very valuable remedy in a variety of diseases. It is particularly applicable, however, in the secondary symptoms of syphilis, in which it is extolled above all the other mercurial preparations by some physicians, whilst others condemn it as ineffectual and injurious in its ultimate consequences. Boerhaave, Van Swieten, De Haen, Pringle, Locher, and others, speak greatly in favour of the powers of this remedy in syphilis. Van Swieten directs it to be given dissolved in proof spirits in the proportion of one grain of the sublimate to two ounces of French brandy. Of this from one to two table-spoonfuls is to be given twice a day.

"Among the principal advantages," says Dr. Francis, "which the corrosive sublimate possesses over every other preparation of mercury are, that judiciously administered, it is particularly mild and safe in its operation, will admit of a more extensive use in all the various forms of lues venerea, and subject the patient to fewer inconveniences; that it readily enters into the general circulation, becomes miscible with the several fluids of the body, the soonest arrests the progress of the complaint, and eliminates the morbid matter through those emunctories best calculated for that purpose; that it supersedes the necessity of salivation, by its action on all the secretions, and by promoting especially the cuticular discharges, and the evacuations from the kidneys; that it is the only preparation to be depended on in those peculiar habits of body so susceptible to become salivated by every other form of mercury now in use; that, in its ultimate effects upon the constitution, it is

attended with comparatively no injury. These facts are indeed truly important, and many of them are granted by those who altogether reject the use of this preparation."*

Dr. Locher, of the Vienna Hospital, on the recommendation of Van Swieten, employed this remedy very extensively in syphilitic affections, and we are told that from the year 1754 to 1762, he cured not less than four thousand eight hundred and eighty persons with it without producing salivation; and that "no persons died, or experienced the least painful and dangerous symptoms, in consequence of this remedy." "That the corrosive sublimate," says Dr. Francis, "of all mercurial preparations, soonest affects the system and arrests the action of the venereal virus, is a truth grounded upon the concurring experience of the most distinguished practitioners."

"It is but proper to state, that the preparation of mercury now recommended, has been employed for the last twenty years in the private practice of Dr. Hosack, and during his attendance at the New York State Prison, New York Hospital, and the Alms-house of this city, as physician of those institutions. It has invariably been found to be the remedy best calculated for the removal of lues venerea both in its primary and secondary stages; and not a single case is recollected in which the cure has not been permanent. Those injurious effects upon the stomach and bowels, which are so much apprehended, were avoided by a cautious employment of the medicine, and by a due consideration of the peculiarities in the constitution and state of the patient. From this form of mercury, salivation scarcely ever was induced, and while under its influence, the

* Observations on Mercury, by Dr. Francis, in the 4th vol. of the Medical and Philosophical Register.

employment of the decoct. guaiac. et sarsaparil. was found to be an excellent auxiliary in recent cases; and in the secondary stage of the disease, where the patient had been neglected, or where improprieties in the cure had been committed, it was almost indispensable."* It must be confessed, however, that much respectable testimony is opposed to the employment of corrosive sublimate in venereal affections. Mr. Pearson particularly speaks unfavourably of its powers. "The result of my observations," says he, "is, that simple mercury, calomel, or calcined mercury, are preparations more to be confided in for the cure of primary symptoms than corrosive sublimate. The latter will often check the progress of secondary symptoms, very conveniently, and I think it is peculiarly efficacious in relieving venereal pains, in healing ulcers of the throat, and in promoting the desquamation of eruption. Yet, even in these cases it never confers permanent benefit, as new symptoms will appear during the use of it: and on many occasions, it will fail of affording the least advantage to the patient from first to last."†

My own experience with this remedy, though not very extensive, is entirely in favour of its powers in lues venerea. I have, for twelve years past, been in the habit of employing the preparation almost exclusively in every stage of syphilis, and I have never known any ill consequences to follow, which could be fairly ascribed to its influence. In ulcers of the nose and gums, caries of the bones, exostoses nodes, and cutaneous eruptions from a syphilitic taint, corrosive sublimate, with opium or cicuta, is a remedy of unquestionable efficacy; and my own practice furnishes me with instances that

* Vide an Inaugural Dissertation on Mercury, embracing its Medical History, Curative Action and Abuse in certain Diseases. New York, 1811.

† On Various Articles of the Materia Medica in Lues Venerea.

yielded to this remedy after the milder mercurial preparations had been long, though ineffectually, employed.

Corrosive sublimate is said to be less useful in this disease, when it is principally seated in the lymphatic and glandular systems.* It is also less applicable, in cases connected with much muscular debility and scirrhosities, than some of the milder preparations of this metal. I have hardly ever given it in any other way, than in union with the extract of cicuta. This combination has appeared to me to be particularly useful in the secondary stage of syphilis occurring in persons of a strumous habit; and it is also much less apt to produce disagreeable effects on the stomach and bowels, than when administered by itself. In employing this remedy, however, it ought to be continued for some time after the symptoms of the disease have disappeared. This, indeed, should always be done, whatever be the preparation of mercury employed; but I am inclined to think, that this precaution is more especially to be attended to in the use of the corrosive sublimate.

Mr. Burckhardt considers corrosive sublimate as almost a specific against the swellings which occur about the joints of rheumatic persons.†

Corrosive sublimate has been recommended as an useful escharotic application to venereal and cancerous ulcerations. Justamond says, that a powder composed of equal portions of sublimate and arsenic, is an exceedingly active escharotic, producing less pain than either of these articles by themselves. It is, however, beyond a doubt, that the corrosive sublimate produces much more pain when applied as an escharotic, than

* Burdach.

† De usu hydrargyri muriatici corrosivi in tumore pro arthritico habito. 1808.

many other articles we possess; nor does it appear, that its usefulness in this respect is such as to compensate for the superior pain it creates. Dissolved in lime-water, however, (constituting the aqua phagedenica) in the proportion of two grains of sublimate to one ounce of the lime-water, it forms a lotion much recommended, in ill-conditioned ulcers of every kind. A weaker solution of this kind, consisting of from two to three grains of the former to eight ounces of the latter, forms one of the most useful injections for gleet, leucorrhœa, and gonorrhœa after the inflammation has been reduced. This injection is particularly recommended by Mr. Carmichael. The aqua phagedenica is also the most efficacious application we have for the cure of that vesicular inflammation produced by the poisonous vine, (rhus radicans).*

In the treatment of cutaneous affections, corrosive sublimate is by many regarded as the most efficacious of all the mercurial preparations, whether applied externally, or used internally. Hegewish, a German writer of note, observes, that a solution of corrosive sublimate is the best remedy we possess in the prurigo podicis; and Willan, Bateman, and others confirm this statement. In erysipelas, this solution is also a most excellent remedy. Applied to the inflamed parts, it often arrests the disease in a speedy manner, as I have myself witnessed in several instances. This practice, so far as I can learn, originated with Dr. Schott, of this city, and is, I am well convinced, entitled to much attention.

The dose of this article is from one-eighth to one-fourth of a grain, repeated twice or thrice daily. It is always best to begin with the smallest dose, and gradually to increase it to as much as can be borne by the

* Dr. Barton.

patient without feeling any particular uneasiness in the stomach and bowels. It may also be very conveniently given in solution in æther or proof spirits. The former of these solutions is particularly recommended by Hufeland. He directs it to be made by dissolving one grain of the sublimate in a drachm of sulphuric æther, the dose of which is ten drops in a cup of lukewarm milk three or four times a day.

The incompatible substances are: the carbonates of the fixed alkalies, which precipitate it of a yellow colour; ammonia, which forms with it a white triple compound; tartarized antimony, nitrate of silver, acetate of lead, sulphur, sulphuret of potass, and soaps, all of which decompose it; iron, lead, copper, bismuth, and zinc, in their metallic state, precipitate it, forming an amalgam on the metal employed. The infusions of chamomile, horse-radish root, colomba root, catechu, cinchona, rhubarb, senna, simarouba, oak bark, and almond emulsion, precipitate it.*

HYDRARGYRI CHLORIDUM MITE.—HYDRARGYRI SUBMURIAS.—CALOMEL.

According to the chlorine doctrine, calomel consists of one proportional of chlorine with one proportional of quicksilver, forming therefore a chlorite of mercury.† The name which is given to it in the British and American pharmacopœias, though sanctioned by general custom, is considered by chemists as very objectionable. For, "if we regard it as a compound of muriatic acid and oxyd of mercury, it is not a sub-

* Paris's Pharmacologia.

† Calomel was formerly described under a variety of fanciful names; as draco mitigatus, aquila alba, aquila mitagata, manna metallorum, panchymagogum minerale, panchymagogus quercetanus, sublimatus, dulce, &c.

muriate, but as much a muriate as the corrosive sublimate; the only difference depending upon the degree of oxidizement of the mercury, which is at a minimum in calomel, and a maximum in sublimate."

Calomel, as it is found in the shops, consists of an ivory-white, inodorous, and insipid powder, almost entirely insoluble in water, requiring, according to Rouelle, four hundred and fifty-two parts of boiling water to dissolve one part of the calomel.

Whether we consider calomel as a sialagogue, an alterant, or a purgative, it is undoubtedly the most important of the mercurial preparations. Being very mild and safe in its operation, and admitting, from its various powers, an exceedingly extensive application as a remedy, it is more generally employed in practice than, perhaps, all the other preparations of this metal put together.

Calomel is particularly useful in all diseases in which we wish to produce a general mercurial impression, and at the same time correct the action of the biliary organs, and evacuate irritating and noxious matter from the intestinal canal. Hence, in febrile diseases, and more especially in those of a bilious character, this preparation is almost exclusively employed where mercury is thought necessary; and even where its general influence is not wanted, its mildness and efficacy as a purgative renders it one of our most valuable remedies in diseases of this kind. It is particularly useful in the diseases of children, on account of the ease with which it may be given to them, from its want of taste. When given in very minute doses, as from one-eighth to one-sixth of a grain, it allays irritability of the stomach and bowels, and restrains purging and vomiting; and hence, it is an excellent remedy in cholera and diarrhœa. I have already spoken of the

anti-inflammatory powers of calomel and opium, given according to the plan of Dr. Robert Hamilton; and I need only add, that the more I see of this practice the more do I become persuaded of its efficacy.

When mixed with lime-water, in the proportion of one drachm of calomel to eight ounces of lime-water, it forms the aqua mercurialis nigra. This is an excellent lotion for ill-conditioned primary and secondary venereal ulcers. It is particularly useful as a gargle in venereal ulcerations of the tonsils and palate.

As an alterative it is given in the dose of from one-fourth to one grain; as a purgative, from five grains to one scruple. Calomel is decomposed by the alkalies, lime-water, soaps, sulphurets of potass and antimony, iron, lead, and copper. These substances are, therefore, medicinally incompatible with it. "There is reason," says Dr. Paris, "for supposing that this preparation may undergo decomposition in transitu, and that therefore some substances may be chemically, and yet not medicinally incompatible with it."

It sometimes contains a small portion of corrosive sublimate, which renders its operation harsh, and even dangerous in delicate habits. The corrosive sublimate may be readily detected by boiling the calomel with a small quantity of muriate of ammonia, and adding carbonate of potass to the solution; if a precipitate take place, it is a proof of the presence of corrosive sublimate.

HYDRARGYRI NITRICO-OXYDUM.—RED PRECIPITATE.

This preparation consists of small bright red scales, of an acrid and corrosive taste. It is not a nitrate, as some will have it, but a subnitrate of mercury. It is insoluble in water; but in nitric acid it dissolves, with

the evolution of heat, but without effervescence. This preparation is sometimes adulterated with red lead; "and this may be detected by digesting it in acetic acid, and adding sulphuret of ammonia, which will produce a dark coloured precipitate."*

Red precipitate is now but seldom employed as an internal remedy. The preparations already mentioned are both milder and more efficacious, where a general mercurial impression is necessary. Some late German writers, however, have spoken favourably of its internal use in old and obstinate venereal ulcers, rheumatisms, enlargement of the bones, and herpetic eruptions. It is particularly recommended in cases of this kind by Berg, Horn, and Hufeland.† Berg gave it in the dose of one-eighth of a grain with fifteen grains of sulphuretted antimony, and gradually increased it up to a grain.‡

As an escharotic it will be particularly mentioned in another place. It may not be improper, however, to say something in this place concerning its external employment in the form of an ointment—the unguentum hydrargyri rubrum. This ointment is much employed as a stimulating application to indolent and fungous ulcers; and is particularly useful in glandular or scrofulous ulcerations.

Externally applied it is of considerable efficacy in herpetic and scrofulous eruptions. It must, however, be cautiously applied, and not upon too large a surface at once, since it has been known, in common with many other external applications, to produce dangerous

* Paris's Pharmacologia.

† Hufeland on the Internal Use of Red Precipitate in obstinate Venereal Affections and other Diseases. Journal der Pracktischen Heilkunde. B. xxvii. st. 4, No. 5.

‡ J. F. Berg de Hydrargyri Oxydati Rubri usu interno. Francof. 1808. Vide Burdach, Mat. Med. vol. ii. p. 330.

effects, by suddenly repelling the eruption for which it was employed. This ointment is also an exceedingly good remedy in chronic psorophthalmia, especially if the ulceration of the meibomian glands is of a scrofulous nature. For this purpose it is advantageously united with opium or camphor. In opacity of cornea, Morenheim and Murdina recommend this ointment as very useful. Falk extols its powers in hæmorrhoidal tumours, of which he says, it speedily lessens the pain and swelling, and gradually removes them altogether.* Ackerman recommends a salve made of ℈i. red precipitate, gr. vi. camphor, and ʒii. of fresh unsalted butter, as an excellent application in chronic and obstinate ophthalmia.

HYDRARGYRUM AMMONIATUM.—HYDRARGYRUM PRÆCIPITATUM ALBUM.—WHITE PRECIPITATE.

This preparation consists of a fine snow-white powder, possessing neither odour nor taste. It is composed of eighty-one parts of mercury, sixteen of muriatic acid, and three of ammonia; and is neither soluble in water nor alcohol. It may be readily distinguished from calomel by its not turning black, like this latter preparation, on being triturated with lime-water. Boerhaave was much in the habit of employing this preparation internally, and he recommends it particularly as being very efficacious, and as seldom, if ever, exciting copious salivation. At present, however, its internal employment is entirely neglected, and it is now only used as an external application in cutaneous affections, &c. It is one of our most efficacious remedies for the itch; it is said to be particularly useful,

* Burdach.

and almost indispensable, in that variety of itch which is attended with large and thick scabs, scattered over the surface of the body. The unguentum Werlhofii, which has been much extolled in cutaneous eruptions, consists of white precipitate and carbonate of potass, made into an ointment.

HYDRARGYRUM SULPHURETUM RUBRUM.—CINNABAR.

Cinnabar is a red substance, of a crystalline appearance, possessing neither smell nor taste. It is insoluble in water, alcohol, and acids; the alkalies decompose it when melted with it. "It is composed of two atoms of sulphur, and one of quicksilver, and is therefore a bi-sulphuret of mercury. It is sometimes mixed with red lead, which may be detected by digesting it in acetic acid, and by adding sulphuret of ammonia, which will produce a black precipitate."* If dragon's blood is mixed with it, it will impart a red colour to alcohol.

Taken internally, cinnabar has but very little action on the system. Cartheuser says, it often passes off by the bowels, without producing any general impression on the animal economy. Lewis, however, states that he saw an instance of profuse and unexpected salivation excited by this preparation. At present it is altogether neglected as an internal remedy, being employed exclusively for the purpose of mercurial fumigations. Abernethy mentions its use in this way very favourably, and alleges that the system may be brought under the mercurial influence, by fumigations with this article, when the usual preparations of mercury are entirely inefficient. Mr. Pearson, however, whose opportunities of observation on this subject have been

* Paris's Pharmacologia.

very extensive, does not speak very favourably of cinnabar as a remedy in lues venerea. He at least does not think it sufficient to eradicate the disease, without the concomitant employment of other mercurial remedies, although he admits that it may be resorted to with much advantage in cases of venereal sores in the mouth, fauces, nose, or on other parts of the body.

The fumigation is made, by throwing ʒss. of the cinnabar on red-hot iron, and in holding the fumes, or letting them pass upon the affected parts as they rise. When inhaled, these fumes generally very soon excite copious salivation.

HYDRARGYRI SULPHURETUM NIGRUM.—ÆTHIOPS MINERAL.

This preparation is in the form of a black powder, without any particular taste or odour. It consists of one proportional of sulphur, and one proportional of quicksilver, being therefore a *sulphuret of mercury;* on being heated it becomes a bi-sulphuret. In a solution of pure potash it is entirely dissolved, from which it may be again precipitated unchanged by adding any of the mineral acids.* In water, alcohol, and the acids it is wholly insoluble.

The æthiops mineral is supposed by some to have a more powerful influence on the vessels of the cuticular surface than any of the other preparations of mercury. Others, on the contrary, deny it any superiority in this respect, and some even regard it as comparatively an inert remedy. Its remediate application appears now to be almost entirely confined to the treatment of cutaneous affections. Dr. G. Armstrong recommends it particularly in scabby eruptions of venereal origin. It

* Paris's Pharmacologia.

has also been recommended in chronic rheumatism, and glandular swellings. It does not, however, appear to be worthy of much attention; and it is now, indeed, but very seldom prescribed in any disease.*

* The *turpith mineral* has already been noticed under the head of Mercurial Emetics, to which the reader is referred for all that is worthy of attention concerning its remediate powers.

CHAPTER XVII.

G. MEDICINES THAT ACT UPON THE RESPIRATORY ORGANS.

I. *Medicines calculated to Increase the Mucous Secretion in the Bronchia, and to Promote its Discharge.*

EXPECTORANTS.

These are medicines which promote the bronchial secretions, and facilitate their discharge by expectoration. In order to understand the modus operandi of these remedies, it is necessary to consider the particular conditions of the pulmonary organs, upon which difficulty or deficiency of expectoration may depend. In many instances, it appears to depend directly on an inflammatory state of the mucous membrane of the bronchial tubes, as is the case in catarrhal and pneumonic affections. Whatever, therefore, is calculated to lessen the inflamed condition of the bronchial lining, gives rise to a more abundant secretion of the mucus, and consequently to a more copious expectoration. Hence we find that such remedies as determine to the surface, are always the most useful expectorants in acute cases; and hence, too, a blister to the breast frequently brings on free expectoration under such circumstances. When, on the contrary, the inflammation has

been subdued by depletion, the secretion of bronchial mucus is often so great that the debilitated powers of the system are inadequate to throw it off. In instances of this kind, we may bring on a free discharge from the lungs by such articles as excite the vital energies. Again, suppressed expectoration may arise from a torpid or spasmodic condition of the bronchial glands, as would appear to be the case in spasmodic asthma. Here expectoration is promoted by the stimulating antispasmodics, and by some of the balsamics, which, possessing a peculiar tendency to pass off by the mucous tissues, after having been absorbed into the circulation, are thereby brought to act directly upon the secretory vessels of the bronchia, and to excite them into action. When there is a fixed source of irritation seated in the lungs, as, for instance, tubercles, the cough is very frequent, and the mucus being therefore discharged almost as soon as it is secreted, sufficient time is not allowed for its accumulation, and a consequent appearance of deficient expectoration exists. In cases of this kind, we derive most advantage from remedies that allay irritation, as opium, prussic acid, &c. By these means the cough is rendered less frequent, and time being thereby given for the accumulation of the mucus secretion in the lungs, a more abundant expectoration ensues on the recurrence of the cough. It frequently happens also, that an irritation in the fauces and glottis keeps up, by continuous sympathy, almost constant coughing. When this is the case, the cough is most readily allayed by such articles as are of a mild mucilaginous nature, which, being swallowed, sooth the irritation of the fauces, and consequently that of the pulmonary system. But even where the irritation which keeps up a cough is primarily and exclusively seated in the mucous membrane of the bronchial tubes,

demulcents probably do good by their soothing impressions upon the fauces alone. For, if an irritation in the fauces can be propagated to the lungs, and produce cough, a fact which is unquestionable, there is every reason to believe that an opposite impression may be likewise conveyed from the former part to the latter, and thus counteract, in a degree. the irritation in this part, and thereby relieve cough. There is still another mode, and to which I have already alluded, in which medicines may produce expectorant effects. It is a fact fully established by observation and experiment, that certain substances, when received into the system, have specific tendencies to act upon certain organs or structures. Thus cantharides affect the neck of the bladder, mercury the salivary glands, ergot the gravid uterus, &c. It is therefore not improbable, that some remedies may have a specific tendency to act upon the pulmonary system when received into the stomach; and this opinion would appear to be demonstrated by the fact, that several of our expectorants are known to be absorbed, and to be again eliminated by the pulmonary emunctories. Thus assafœtida, whether injected into the abdomen of animals, or thrown into the stomach or rectum, is very soon discovered by its peculiar odour in the mucous surfaces, and especially in the mucous membrane lining the bronchiæ. So also onions, when taken into the stomach, impart an exceedingly strong and offensive odour to the breath.

From all this it is evident, that in prescribing expectorants, attention should be paid to the particular character of the symptoms which render them necessary; for a remedy that may be advantageous in this respect, in one case, may be useless, or even pernicious in another, requiring a medicine of this kind. Thus, when cough and deficiency of expectoration arise from

an acute inflammation of a bronchial lining, stimulating expectorants must be avoided. Where, however, these symptoms depend on a debilitated and spastic condition of the lungs, the stimulating articles of this class are those from which the greatest advantage is to be gained. Of the various diseases in which expectorants may be usefully employed, nothing need be said in this place, as these will necessarily come under notice when treating of the particular articles of this class.

RADIX POLYGALÆ SENECÆ.

The diuretic and emmenagogue virtues of this article, have already been noticed; and to complete its medical history, it only remains to speak of its virtues as an expectorant. In this respect it is entitled to very great attention, being undoubtedly one of the most active and useful articles of this class. Possessing, however, very considerable stimulant along with its other properties, it cannot be used with safety in cases attended with high inflammatory excitement. In the latter stages of pneumonia, after the general as well as local inflammatory action has been moderated by depletory measures, there sometimes remains a troublesome cough, attended with imperfect expectoration, which is in general greatly relieved by the use of a decoction of this root. It also acts very beneficially in cough excited by an irritation in the fauces and larynx from cold, and which is usually attended with hoarseness. In no disease, however, has this article been more extravagantly praised as an expectorant, than in cynanche trachealis. Dr. Archer, who first noticed its virtues in this disease, represents its powers as often adequate, without the aid of any other means, to remove this alarming malady. Although very sel-

dom sufficient, by itself, to the performance of a cure in this disease, it is unquestionably a very useful remedy in its management. As an emetic, it has been used in the beginning of the disease, and there can be no doubt of its often manifesting very beneficial effects when employed with this intention. Its stimulating properties, however, render it objectionable in the early stages of the complaint; and it is besides not equal to the tartar emetic in this respect, which is at once prompt, relaxing, and antiphlogistic in its effects. If, after the inflammatory symptoms have been reduced, a dry and hoarse cough, with oppressed respiration remains, we possess no remedy equal in efficacy to the polygala. To children from two to six years of age, we may give one or two tea-spoonfuls of a decoction made by boiling half an ounce of the root in a pint of water down to three gills, with an equal quantity of honey, every one or two hours, until vomiting comes on. It is also an exceedingly good remedy in the hoarseness which is apt to affect children on taking cold, and which, if neglected, sometimes terminates in croup.

SCILLA MARITIMA.

The squill is very frequently prescribed as an expectorant, and may be considered as one of the most valuable articles of this class of remedies. In the pectoral affections of children, the oxymel of squill is a very convenient and useful remedy. Possessing emetic, along with its expectorant properties, it is peculiarly serviceable when given to the extent of producing vomiting in very young subjects affected with cough, and attended with an accumulation of viscid mucus in the bronchia; in hooping-cough also, it frequently

affords much relief. Being, however, considerably stimulant in its operation, it can only be employed with propriety in cases unattended with inflammation and fever. In conjunction with the camphorated tincture of opium, it forms an excellent medicine in slight catarrhal affections. From its active diuretic properties, in connexion with its virtues as an expectorant, it is particularly adapted to the treatment of hydrothorax. It may be given either in substance, or in the form of the vinegar or oxymel of squills. The dose of the powder is from one to four grains; that of the vinegar and oxymel from one to two tea-spoonfuls. The following are excellent expectorant formulæ.*

ALLIUM SATIVUM.

The peculiar odour and acrimony of garlic are extracted by infusion in water; but by boiling they are almost entirely dissipated. In point of medicinal properties it bears considerable analogy to the squill; being, however, inferior to it in its powers. As an expectorant it has been frequently prescribed in catarrhal complaints, and it would appear to be more especially indicated from its diuretic virtues in such cases as are attended with a hydropic state of the system. Being, however, much more unpleasant, and less active than many other articles of this class, especially the squill, it is at present but seldom employed as an internal remedy in regular practice. It is usually given in the form of a syrup, or oxymel, which is made by infusing the root in vinegar, and

* ℞.—G. ammoniac. ʒss.; scillæ pulv. gr. x.; syrup tolutan q. s. Ft. massa in pil. gr. v. dividenda. Take two every morning and evening.

℞.—Oxymel scillæ ℥iss.; misturæ ammoniac. ℥iii.; tinct. opii camph. ℥i.—M. Dose, a dessert-spoonful morning and evening.

afterwards adding honey to it until it acquires the consistence of a syrup.

The onion also is employed, particularly in domestic practice, as an expectorant; and its effects in this way are very useful.

ARUM TRIPHYLLUM.—INDIAN TURNIP.

This plant is found both in North and South America. The root, which is the part employed for medicinal purposes, is bulbous, fleshy, giving off a circle of numerous radicles from its upper part. The lower half of the bulb is covered with a blackish, loose, and wrinkled skin. When fresh it is exceedingly acrid, producing very violent smarting pain when taken into the mouth, which leaves a soreness for many hours on the tongue. Applied to the skin, however, it very seldom produces any rubefacient effects whatever. "The acrid property which resides in this and other species of arum," says Dr. Bigelow, "appears to depend upon a distinct vegetable principle, at present but little understood. It is extremely volatile, and disappears almost entirely by heat, drying, or simple exposure to the air." This principle appears to possess "no affinity for water, alcohol, or oil, being volatile; and, in a state of gas, inflammable."*

The dried root possesses but very little acrimony. It is, however, not destitute of active properties even in this state, and may be very usefully employed in pectoral affections, as well as in various other complaints connected with a cold and cachectic habit of body. It is by no means incapable, as is stated by some writers, of affecting the general circulation. Of the contrary of

* Bigelow's American Medical Botany, vol. i. p. 55.

this I have more than once had satisfactory evidence. In the chronic asthmatic affections of old people, it is a remedy of very considerable value. I have also seen it do good in chronic catarrhs, and in phthisis pulmonalis. In these complaints it is indeed one of the most common remedies in domestic practice. It has also been prescribed with advantage in rheumatism, and in apthous sore-throat. In this latter affection, Dr. Thacher says, it is a remedy of approved efficacy. It has been recommended in the form of an ointment made of the fresh root, in tinea capitis, and tetter. Dr. Burson states, that the berry of the arum is more retentive of its peculiar acrimony than any other part of the plant. The arum root is usually directed to be given in the form of a decoction in milk; but Dr. Bigelow observes, that it imparts none of its acrimony to milk on boiling. The best mode of administering it would appear to be in the form of an emulsion with gum arabic and sugar. It may be given in doses of from twelve to sixty grains two or three times a day. Besides the articles already mentioned, there are a great many others from the vegetable kingdom, that possess expectorant properties; of which the following are the principal: Inula helenium, iris florentina, tussilago petasites, pulmonaria officinalis, borago officinalis, hedera terrestris.

G. AMMONIACUM.

This article has already been noticed under the head of antispasmodics. As an expectorant its powers are very considerable. In the latter stages of pneumonia, after the fever and inflammation have been moderated, and in chronic catarrhal affections, attended with accumulations of mucus in the lungs, ammoniac in union with muriate of ammonia, oxymel of squills,

antimonials, laudanum, or nitric acid, &c. will in general afford much benefit. It may also be employed with peculiar advantage in chronic complaints connected with inordinate mucus secretions in the bronchiæ, and more especially, when these affections are attended with a cold and sluggish condition of the general system. It is also very useful in humoral asthma; and in the catarrhal affections of old people, a combination of gum ammoniac and squill, forms one of our most valuable expectorants. It is particularly serviceable in those cases where the expectoration is deficient from a want of power to throw up this viscid bronchial mucus, and where the skin is cold and the pulse weak and sluggish. In its general operation it is considerably stimulant. It is therefore inadmissible in cases attended with active inflammation or high arterial excitement. In chronic cough, accompanied with a torpor of the alimentary canal, I have known large doses of this medicine taken in the form of pills to afford much relief. For the doses and modes of prescribing ammoniac, the reader is referred to the account of this article under the head of antispasmodics. The following are excellent expectorant formulæ, into which this substance enters as a principal part.*

ASSAFŒTIDA.

Besides its antispasmodic properties, assafœtida possesses also very useful expectorant powers. Employed

* ℞.—Acidi nitric ʒii. Aq. fontanæ ℥viii. Misce et terre ammon. ʒii. Donec solutio fit, et emulsio evadit. Dosis coch. unum. mediocri ex liquore aliquo demulcenti.

℞.—Misturæ ammoniæ ℥i. Syrupi. tolut. ℥ss. Aq. cinnam. ℥iss. Tinct. opii. camp. ℥ss.—M. Fiat. mistura. Dose, a table-spoonful three or four times a day.

The following is particularly recommended by Stoll:

℞.—G. Ammon. vitello ovi soluti āā ʒii. Aq. pullegii ℥vi. Syrup. hysopi. ℥i.—Misce et exhibe cochleatim, alterius horis.

in the form of an emulsion, its effects are often highly beneficial in coughs, connected with a weak and cold habit of body, and particularly in pertussis, provided no inflammatory symptoms be present. In chronic cough attended with oppressed respiration and a copious secretion of bronchial mucus, assafœtida generally affords considerable relief. Its stimulating quality renders it improper in cases connected with fever or inflammation. It may be administered according to the following formula.*

CAMPHORA.

Although camphor has not generally been mentioned as an expectorant, it is nevertheless well entitled to notice in this place. In protracted catarrhal affections, unaccompanied by fever, it may be advantageously exhibited in union with squills, assafœtida, opium, &c. It is said to be especially useful in cases of cough connected with a rheumatic habit, or depending on repelled cutaneous diseases, when given in combination with sulphur and antimony. Combined with the vinegar of squill, it forms a valuable expectorant in humoral asthma. The following is an excellent formula for exhibiting it as an expectorant.† The tinctura opii camphorata, is also a very useful medicine in this respect.

CARBONAS POTASSÆ ET SODÆ.

The carbonates of potass and soda have been long known to produce excellent effects in certain pulmo-

* ℞.—Assafœtid. ℈ii. Solve in aquæ menthæ ℥iii. Acet. scillæ ʒii. Syrup. tolu. ℥i.—M. Dose, a table-spoonful every third or fourth hour.

† ℞.—Pulv. camph. ℈iss. Pulv. g. arab. ʒiss. Pulv. sacch. alb. ʒi. Tere simul cum aquæ puræ ℥vii. Vin. antim. ʒiss. Oxy. scillæ ℥iss.—M. Dose, a table-spoonful three or four times a day.

nary affections attended with cough and accumulations of viscid mucus in the bronchia. According to Mascagni, it is very efficacious, when given in large doses, in pneumonia accompanied with an oppressive collection of slime on the lungs. It is also very highly spoken of by Dr. Pearson, as a remedy in hooping-cough, a disease in which it has very deservedly become a popular medicine. I have frequently prescribed it with much advantage in this affection, and never have known it to give rise to any unpleasant symptoms. The following is the formula recommended by Dr. Pearson.* In catarrhal affections attended with irritation of the general system, I have repeatedly used the following expectorant mixture with decided benefit.†

BALSAMUM TOLUTANUM.

This substance is obtained from the toluifera balsamum, a native tree of South America, by making incisions through its bark, from which it exudes in considerable abundance during the hot season. It is a thick tenacious substance, becoming hard by age, and of a yellowish brown colour. It has a warm and sweetish taste, and possesses a fragrant odour, very similar to that of lemons. It contains a volatile oil, benzoic acid, and resin. Alcohol dissolves it readily. "When dissolved in the smallest quantity of a solution of potass its odour is changed into one that resembles clove pink."

The balsam of tolu possesses no inconsiderable

* ℞.—Carbon. sod. gr. iii.; vin ipecac. gtt. v.; tinct. theb. gtt. i.; aq. font. ʒi. This is a dose for a child a year old, which may be repeated every three or four hours.

† ℞.—Potassæ carb. gr. x.; tinct. opii gtt. xx.; vin. antim. gtt. xv.; syrup. symp. ʒii.; aq. fontanæ ℥i.—M. To be taken on going to bed.

expectorant properties, and may be employed with benefit in chronic catarrhal affections, and especially in coughs connected with general debility and a cold phlegmatic habit of body. It is usually given in union with other articles of this class. The following formulæ, into which it enters, are excellent expectorant preparations.*

BALSAMUM PERUVIANUM.

This balsamic substance is obtained from the myroxylum peruiferum, a native forest tree of South America. It is a viscid liquid, of a dark brown colour. It has an agreeable aromatic and penetrating odour. Its taste, which is at first rather mild, soon becomes very acrid, somewhat bitter, and hot. It contains an essential oil, a peculiar resin, and benzoic acid. It is perfectly soluble in pure alcohol; sulphuric æther dissolves nearly the whole of it, but boiling water takes up only a part of the benzoic acid. This article was formerly much employed as a remedy in chronic pulmonary affections. By the authority of Dr. Fothergill, however, this balsam, in common with the other articles of this kind, was, until late, almost entirely rejected as a remedy in pectoral diseases. The chief objection that has been urged against the employment of the balsams in affections of this kind is, their stimulating character; a quality which they undoubtedly possess in a very considerable degree; and which certainly also renders them inadmissible in all cases attended with acute inflammatory symptoms.

* ℞.—Cetacei ʒii.; vitel. ovi q. s. ad solut. et adde. Aq. fontanæ ℥vi.; syrup, tolutan. ℥iss.; tinct. opii camph. ℥ss.—M. Dose, a table-spoonful every four hours.

℞.—Mistura ammoniæ ℥iv.; syrup. tolut. ℥i.; aq. pulegii ℥iii.; tinct. opii gtt. l.—M. Take a table-spoonful three or four times a day.

There are, however, instances of pulmonary disease, which simulate genuine phthisis, being attended with purulent expectoration, cough, emaciation, with slight hectic fever, &c., and which depend on a chronic inflammation of the mucous membrane of the bronchia, in which the balsamic remedies often display the most salutary operation. In the chronic catarrhal affections of old people, and in asthma attended with a cold and torpid state of the system, the balsam peru has been employed with excellent effect. It has also been praised as a remedy in gonorrhœa, and in various other diseases connected with a leucophlegmatic habit of body. Dr. Kollock, of Savannah, states, that he has seen several cases of tetanus from wounds cured, as he believes, by the external and internal use of this balsam. The influence of this medicine, he says, "has in several instances almost immediately controlled the spasms, and of itself restored the patient when rapidly sinking under the very liberal use of opium, bark, and wine. Two drachms in twelve or twenty-four hours is the largest quantity I have ever found it necessary to give."*

The balsam peru is given in doses of from twenty to thirty drops, upon a bit of sugar, two or three times a day. It is also given in the form of tincture, from forty to sixty drops.

INHALATIONS.

The inhalation of æriform fluids may be employed to great advantage in the treatment of pulmonic affections. In this way we are enabled to make direct

* Thacher's Dispensatory.

impressions on the respiratory organs, a circumstance which experience has shown to be of much consequence in many of the diseases to which these organs are liable. For the sake of distinctness, I shall arrange what I have to say upon this subject under the four following heads: Aqueous vapours; ætherial vapours; fumes of burning substances, and gases.

Aqueous vapours.—In catarrhal affections, attended with painful and difficult expectoration, much benefit may generally be obtained from the inhalation of the steam of hot water, or of vinegar and water. This acts as an emollient and soothing application to the tender and inflamed vessels of the internal surface of the bronchial tubes. In pneumonia also, after the violence of the arterial excitement has been reduced by depletory measures, the inhalation of steams of hot water, or decoctions of emollient herbs, will often contribute much to the support of an easy and regular expectoration. In no affections, however, are inhalations of this kind more decidedly beneficial than in the paroxysms of asthma. "To moderate the severity of the paroxysms in asthma," says Dr. Thomas, "we cannot employ a more powerful and efficacious mean of relief than the inhalation of warm steam frequently from an inhaler, or the spout of a tea-pot. An infusion of chamomile flowers, with the addition of a little æther, may be used on the occasion." Inhalations of warm water and vinegar are also often very serviceable in cynanche tonsillaris, and trachealis.

Ætherial vapours.—The inhalation of ætherial vapours is a remedy of very considerable value in certain affections of the respiratory organs. In dyspnœa, depending on a spasmodic condition of the pulmonary system, I have frequently derived very great benefit from the inhalation of the vapours of sulphuric æther.

Dr. Pearson, who speaks very highly of the employment of the sulphuric æther in this way, affirms that its efficacy is considerably enhanced by dissolving in it some of the extract of cicuta. Mr. Alibert states, on the authority of an author whose name he does not mention, that the inhalation of sulphuric æther was found quite useful in a case of catarrhal phthisis, complicated with hysteria. The effects which arise from the inhalation of the vapours of this æther from a bladder are exceedingly remarkable, and resemble entirely those which are known to proceed from the inhalation of the nitrous oxyde gas. The sensations experienced during the temporary madness it produces, is said to be indescribably pleasant; but the shock given to the brain by the experiment is violent, and has been known to bring on convulsions, and other alarming symptoms.

Quite recently, Dr. Bodtcher, of Copenhagen, has published some observations on the efficacy of the vapours of camphor in complaints affecting the cavities of the nose, the throat, and the chest. He states, that in the worst cases of stoppage of the nose from cold, a piece of camphor need only be kept for a few minutes before it, to obtain great relief. In cynanche tonsillaris, camphor kept before the mouth or nose, is said frequently to produce much good. It has also been found very serviceable in spasmodic coughs, in croup, and in asthma.* I have never seen camphor employed in this way, and can say nothing concerning the value of this practice. Dr. Bodtcher, however, speaks with great confidence of its usefulness.

Fumes of burning substances.—The inhalation of the fumes of tar and of resin, was very early considered beneficial in diseases of the lungs. The following observations of Pliny, (Hist. Nat. lib. xxiii. cap. 6) have

* Hufeland's Journal for June, 1822.

a reference to this subject, and are, I think, very interesting. "Silvas eas duntaxat quæ picis resinæque gratia raduntur, utilissimus esse phthiscis aut qui longa ægritudine non recolligent vires, satis constat; et illum cœli aera plus ita quam navigationum Ægyptiani proficere, plus quam lactes herbedos per montium æstiva potus." Dr. Mudge, of Plymouth, above thirty-five years ago, related a case of pulmonary consumption, attended with purulent expectoration, which was entirely cured by residence in the country, and the inhalation of the fumes of common resin twice a day. But the attention of the profession was more particularly directed to this practice, about six years ago, by a publication of Dr. Alexander Crichton, physician to the court of St. Petersburgh.* He gives an account of several consumptive patients, who were perfectly cured by the employment of the tar fumes. He states, that the best mode of fumigation is to put the tar into an open vessel, over a lamp or hot iron, so as to produce a slow volatilization, until the air of the chamber is well impregnated. In this atmosphere the patient may remain from one to two hours together, two or three times a day. He observes, also, that when the cough and hectic have been considerably subdued, the fumigation should not be persisted in, as it is apt to produce a troublesome dry cough, "and prevents the enjoyment of what is then fit for the patient,—common air.

In the treatment of hooping-cough, the inhalation of tar fumes is often highly beneficial. Mr. Wansbrough, of Fulham, in England, has related some very remarkable instances of the efficacy of this remedy, in this, as well as in several other diseases, attended with diffi-

* An Account of some Experiments made with the Vapour of Boiling Tar in the Cure of Pulmonary Consumption. Edinburgh, 1817.

culty of respiration. An infant, three months old, from an accidental exposure to cold, became affected with catarrh, and difficulty of breathing, attended with evident accumulation of mucus in the bronchial cells, which the child was not able to expectorate. The symptoms increased rapidly; leeches, emetics, and expectorants, were unavailingly used, and death appeared to be inevitable. In this situation he had recourse to *tar vapour*. "I applied it at a distance," he says, "whilst the child lay in its mother's arms, breathing quick and short, with frequent interruption, from what appeared to be accumulation in the bronchiæ. The little creature seemed revived the instant she inhaled the vapour, and made an effort to cough." The fumes were brought nearer to her nostrils, which soon occasioned cough and vomiting. The patient was greatly benefitted by this, and by repeating the fumigation twice a day for about a week, she was perfectly restored. In two cases of hooping-cough, that had been mismanaged during the early periods of the disease, and in which the expectoration had assumed a purulent appearance, I have derived decided benefit from tar fumigations. This remedy has also been found very useful in asthmatic affections. In acute inflammatory affections of the lungs, however, it cannot be employed without doing mischief. "It appears," says Mr. Wansbrough, "in cases where the lungs are under the influence of an inflammatory diathesis, the exhibition of the tar fumes is improper; but in chronic pulmonary affections, and also subsequent to the existence of increased arterial action, I have no doubt of the superior efficacy of this remedy." Mr. Wansbrough employed the vapour of the Barbadoes tar. The inhalation of the tar fumes appears to be particularly beneficial in chronic bronchitis; or in that form of pulmonary consumption

which depends on a chronic inflammation of the mucous membrane of the bronchiæ.

The inhalation of nitrous vapours has also been employed, with much advantage, in certain affections of the respiratory organs. It is stated to be particularly efficacious in hooping-cough. Several cases of this disease are related by Mr. Patterson, in which these fumigations produced the happiest effects.* Dr. John Thomas, of this city, has also related an instance of the excellent effects of this remedy in the present disease.† The most convenient mode of applying nitrous vapours is, to put an ounce of sulphuric acid into a tea-cup placed in a sand-bath, and to add to the acid, from time to time, small portions of the nitrate of potash.

The practice of smoking the roots of stramonium in asthma, and other pulmonary affections, does not appear to be entitled to much attention. I have prescribed it in several instances, but never with the slightest advantage. I have nevertheless seen some asthmatic persons who assured me that they generally derive benefit from it.

Gases.—Soon after the discovery of oxygen gas, many physicians directed their attention to its employment in the treatment of diseases, and the reports which were at first published of its effects were highly promising. A more enlarged experience, however, has not confirmed the expectations which were once entertained of its powers, and it is now as much too little attended to as it was formerly too highly extolled. The respiration of this gas was at first prescribed by Fourcroy in pulmonary consumption, and although its im-

* The Effects of Nitrous Vapour in preventing and destroying Contagion, by James Carmichael Smith, M. D., p. 117.

† American Medical Recorder, vol. v. p. 660.

mediate effects appeared to be salutary, it was soon found to be one of the most certain means of hastening the progress of this disease to a fatal termination. Beddoes, believing that phthisis is essentially connected with a superabundant absorption of oxygen in the lungs, conceived the idea of placing consumptive patients in an atmosphere containing a smaller proportion of oxygen than the common air; or causing them to respire occasionally from a proper apparatus, air with a reduced portion of this gas. Hence he recommends consumptive patients to live in low and miasmatic districts, to sleep in cow-stables, or in other places containing a deteriorated atmosphere. Experience, however, did not realize the hopes which were entertained of this practice, although there are not wanting some well authenticated examples of its having procured advantage. Little as is to be expected from the respiration of oxygen, in phthisis pulmonalis, it is nevertheless a remedy of considerable value in a variety of other affections. In asthma it has been frequently employed with unequivocal benefit. Beddoes speaks with great confidence of the usefulness of oxygen gas in this disease. He affirms that as soon as it is respired the laborious breathing ceases; the livid colour of the countenance disappears, and respiration goes on freely and regularly. Dr. Thornton speaks highly of this practice. The respiration of atmospheric air, containing an augmented portion of oxygen, has also been found very beneficial in chronic cough depending on atony of the pulmonary organs. Various other gases have been employed in medicine, particularly hydrogene and nitrogene. Those who wish to be particularly informed relative to the employment of pneumatic remedies, may consult the works of Beddoes and Thornton on this subject.

CHAPTER XIX.

H. MEDICINES WHOSE ACTION IS PURELY TOPICAL.

DEMULCENTS.

Demulcents are medicines calculated to obviate or lessen the effects of irritating matters, and that, "not by correcting or changing their acrimony, but by involving it in a mild and viscid matter, which prevents it from acting upon the sensible parts of our bodies, or by covering the surface exposed to their action."

The mode in which this class of substances proves remediate is, therefore, very simple, being nothing more than an interposition of a bland fluid between the irritating matter, and the parts exposed to their influence. As inflammation frequently exists in parts from which it is impossible to exclude substances of an irritating nature, and to which we may nevertheless make direct applications, it is a matter of very great consequence to be able to apply such substances as afford some protection to the sensible and inflamed parts. Thus in inflammation of the bowels, we derive advantage from mild mucilaginous drinks, by protecting the bowels from their irritating contents; so also in ophthalmia much relief is obtained by a few drops of mucilage, as, for instance, that of the pith of sassafras dropped into the eye, by which the inflamed conjunctiva is less irritated by the tears and atmospheric air.

It is not so easy to perceive, however, in what way demulcent remedies prove beneficial in parts to which they must reach through the medium of the circulation, as, for instance, in the diseases of the urinary passages. It is probable, as has been supposed, that they prove beneficial in the disorders of these parts, only by the large quantity of water which is usually taken with them, and by which the urine is rendered less irritating.

GLYCYRRHIZA GLABRA.

The liquorice is a perennial plant, indigenous to the south of Europe, and naturalized in the United States. The root, which is the only part used in medicine, has a peculiar sweet and mucilaginous taste. It contains, according to the analysis of M. Robiquet, some amylaceous fæcula, a peculiar saccharine matter (glycion) different from common sugar in not being fermentable, a new crystalline substance, possessing the appearance, but not the chemical character of a salt, and a resinous oil.* The acetate of lead, muriate of tin, and nitrate of mercury, form a copious and more or less light brown precipitate, with the concentrated aqueous infusion of this root.† Its saccharine matter, but none of its other principles, is extracted by alcohol. Water is its proper menstruum. By successive infusions it yields different extracts. That which is obtained by the first is yellowish, and of an agreeable sweetish taste; that obtained by infusing it a second time, is darker and less agreeable; the matter extracted by a subsequent infusion has scarcely any sweetness; but, on the contrary, is bitterish and acrid.‡ When employed in decoction it should therefore be boiled but a

* Alibert, Elemen. de Therap.

† Pfaff's Materia Med. B. i. s. 193. ‡ Ibid.

very short time, otherwise it will acquire a bitterish and unpleasant taste. The root yields a very large portion of a black extract, which is moulded into round pieces, well known by the familiar name of liquorice stick.

The liquorice root is seldom employed by itself, being commonly prescribed in combination with other substances, either to correct their taste or to improve their expectorant properties. As an expectorant demulcent it is, indeed, a very excellent remedy. Being mild and unirritating in its effects, it may be employed in the acute as well as in the chronic forms of catarrhal affections. The extract dissolved, and taken either by itself or in conjunction with other expectorants, is very frequently used in disorders of this kind. The following are expectorant formulæ.*

ULMUS FULVA.—SLIPPERY ELM.

There are four species of ulmus indigenous to the United States. The present species seldom rises above thirty feet in height, with a slender trunk, dividing into numerous branches, and invested with a rough light-coloured bark. The leaves are oval-oblong, with a very long point, pubescent on both sides, serrated on their edges, and unequal at the base; the buds are tomentose, with a thick tawny wool; the flowers sessile; succeeded by membranous seed-vessels of a compressed and oval shape, containing one oval seed.

The inner bark of this species of elm contains a very large portion of mucilage, which is readily extracted

* ℞.—Extract. glycyrrh. ʒii.; aq. font. ferv. ℥iii.—M. ft. solut. deinde adde vin. antim. ʒii.; tinct. thebaic. gtt. xl.—M. Dose, a table-spoonful every two or three hours.

℞.—Extract. glycyrrh. ʒii.; solve in aq. fœniculi ℥iii.; aq. ammoniæ ʒi.; aq. fontanæ ℥v.—M. Dose, a table-spoonful three times a day.

by infusion or gentle decoction. In the treatment of catarrhal affections, in pneumonia, and in consumption, the infusion of this bark may be very usefully employed. It is also an excellent demulcent in affections of the urinary passages, and particularly in some of the diseases of the alimentary canal. In dysentery, its beneficial effects have been abundantly testified. I have very frequently used it in this disease, from the very commencement through its whole course, in conjunction with other remedies: and so well satisfied am I of its utility, that I seldom now prescribe in the complaint without ordering copious draughts of this excellent demulcent. Dr. Maxwell Sharp, of Tennessee, relates two cases of this disease in children, attended with excruciating tormina in the umbilical region. A great variety of remediate means had been used without advantage, and the two little patients appeared to be sinking fast. He was finally induced to try the elm bark decoction, on the authority of Dr. Mease, whose paper he had read in Dr. Coxe's Medical Museum; and "the effect," he says, "was so immediate that it appeared to act like a charm on the disease."* Dr. Mease has informed me that the infusion of this bark is a common drink among women, when near their confinement, from a prejudice in favour of its powers to procure easy labours. This supposed virtue, he thinks, is probably derived from the aborigines of our country, among whom it is known that this drink is constantly taken upon similar occasions. It does not seem probable to me, that its efficacy in dysentery depends entirely upon its demulcent quality; for other vegetable demulcents, such as flaxseed tea, solution of gum arabic, &c. are not equal to it in this respect. It certainly pos-

* Coxe's Medical Museum, vol. ii. p. 123.

sesses some active properties, as its beneficial effects in certain diseases evince, and which cannot be ascribed to its demulcent powers. Thus the internal use of the decoction of this bark has been found very efficacious in lepra vulgaris, and in other varieties of cutaneous diseases.* It is seldom found to show its good effects in these complaints, before its use has been continued for several months. The more diuresis it produces, the more certain is its beneficial operation. It is said frequently, at first, to increase the eruption, and this is considered an evidence of its ultimate good effects. For this purpose, two ounces of the bark are to be boiled in three pints of water down to one pint, and this is to be drunk in the course of a day. Quite recently the elm bark has been recommended by Mr. Henry Jeffreys, as a valuable substitute for sarsaparilla.† He employed it with decided advantage, in those cases for which sarsaparilla is usually prescribed. He used it according to the following formula.‡ The elm bark may also be used with very good effects, as an external application, in ulcers, cutaneous eruptions, gun-shot wounds, chilblains, &c. For this purpose the bark must be bruised and boiled in water, and applied in the shape of a poultice. The mucilage which this bark contains, affords very considerable nutriment. Dr. Strong states that a soldier, who lost his way, supported himself for ten days on this mucilage and sassafras.

* Lettsom, Med. Memoirs of the Gen. Dispensary, sect. iii. p. 152. Lyoans, in the Medical Transactions, vol. ii. Banau, in Abh. fur Pract. Aerzte B. ix. p. 195. Richter, Specielle Therapie, B. vi. p. 95.

† Cases of Surgery, by Henry Jeffreys, 8vo. p. 237.

‡ ℞. Decoct. ulmi. (Ph. L.) Oc. viii.; sassafras rad. concisæ. Guaici. ligni rasi sing. ℥i.; mezer. rad. corticis ʒiii.; glycyrrhisæ rad. contusæ ℥i.: decoque per horam et cola. The dose is from half a pint to one pint a day.

ACACIÆ GUMMI.—GUM ARABIC.

The greater part of pure gum arabic is furnished by the *acacia vera* of Wildenow, a tree which grows in the sandy deserts of Arabia Petræa, Africa, and Egypt. It is obtained by exudation from incisions made into its bark. There are, however, a number of other trees from which a gum, similar to that furnished by the acacia vera, is obtained, and which is commonly mixed and sold with the genuine acaciæ gummi.* Dr. Duncan observes, that "it is remarkable that the barks of all the trees which furnish this bland mucilaginous substance are highly astringent; that of the mimosa nilotica (acacia vera) itself is used in India for tanning; and in our own country the cherry and plum-trees, which sometimes yield a little gum, have very astringent barks.

Two kinds of gum are met with in the shops, which are usually sold indiscriminately under the name of gum arabic. The genuine gum arabic consists of small irregular and roundish pieces, colourless, or of a very pale yellow colour, breaking with a shining conchoidal fracture, without smell, and a faintly sweet and mucilaginous taste. The other variety, which is brought from Senegal, consists of much larger globular masses, of a yellowish brown, or dark brown colour, having a rough or wrinkled surface. Gum arabic is soluble in every proportion in water. It is also dissolved by the pure alkalies, lime water, the vegetable acids, but not by alcohol, æther, and oils. The nitrate of mercury converts the solution of gum arabic into a beautiful peach-blossom colour, a circumstance which may be

* All the species of mimosa, the swietenia febrifuga, melia azadirachta, and the various species of the genus terminalia.

considered characteristic of this gum. The gum Senegal assumes a more bright red, and becomes slightly turbid on standing some time.* Chlorine, passed through a solution of gum arabic, converts it into citric acid.† A very diluted solution of the nitrate of iron converts its solution into a yellowish colour, becoming slightly turbid, and depositing a white sediment which is insoluble in nitric acid. "Neither the strong acids nor alcohol, when considerably diluted, occasion any disturbance in it; but sulphuric æther, and its compound spirit, the tincture of muriated iron, and sub-acetate of lead, produce very dense precipitates; the acetate of lead only occasions decomposition when an alkaline salt is present in the formula: the volatile alkali curdles the mucilage, and hard calcareous waters render the mixture difficult and often impracticable."‡ When dissolved in water in the proportion of one part of the gum to six parts of the water, it forms a mucilage about the consistence of a syrup; with two parts of water it forms a very thick mucilage.

Gum arabic is one of our most useful and pleasant demulcent remedies, and is much employed in affections of the lungs, bowels, and urinary passages. In the treatment of dysentery, the free use of this mucilage is often productive of very salutary consequences. In the chronic bowel complaints of children, it is peculiarly beneficial; I have prescribed it with complete success in such cases, after a variety of other remedies had been tried ineffectually. As it is highly nutritious, children labouring under such affections may take it freely as a nourishment; indeed, I have sometimes confined them almost exclusively to it for several

* Pfaff's System der Materia Medica, B. i. p. 111.

† Annales de Chimie, vi. p. 178.

‡ Paris's Pharmacologia.

weeks; and in one instance, I have seen a little patient restored to health by this treatment alone, after the case appeared to be hopeless. In catarrhal complaints, and particularly in coughs depending on irritation in the fauces or glottis, considerable relief may sometimes be obtained by allowing the gum to dissolve slowly in the mouth. Its solution is also much used as a demulcent drink in strangury, ardor urinæ, and gonorrhœa. In pharmacy the mucilage of this gum is much employed in forming emulsions with oils, resins, balsams, &c., and to suspend heavy and insoluble substances in water.

GUMMI TRAGACANTHA.

This gum is obtained by exudation from the astragulus creticus, a thorny shrub growing on the island of Candia, and other parts in the Levant. It comes to us in the form of long, crooked, and somewhat flattened pieces, and occasionally also in irregular lumps. The colour of the best sort is whiter: that which is of inferior quality is generally of a pale red or yellowish brown. It is translucent, and has no lustre. When put into water, it swells up very much, but does not dissolve so as to form an entirely transparent solution. The acids, particularly concentrated nitric acid and the caustic alkalies, render the aqueous solution of this gum more transparent.

The solution of gum tragacanth exceeds that of all other substances in viscidity. Eighty grains of the gum form a mucilage with thirty-two ounces of water of the consistence of a syrup. It is used like gum arabic, as a demulcent in catarrhal affections, &c., and for pharmaceutic purposes. It is not, however, equal to gum arabic for making emulsions with oily or resin-

ous substances; nor should it be employed for making pills, unless they are to be taken soon after being made; as it becomes exceedingly hard and difficult of solution on becoming dry.

SEMEN LINI.

Flaxseed contains a very large portion of mucilage, which is readily extracted by infusion. The mucilage resides chiefly in the cuticle of the seed. Their parenchymatous substance contains, besides a mucilage, a large portion of a bland oil, some albumen, and a very small quantity of saccharine matter.* An ounce of the unbruised seeds infused in a pint of boiling water, forms a moderately thick, ropy, colourless mucilage, possessing no odour, and a sweetish mucilaginous taste. Cold water does not extract any mucilage from the unbruised seeds.

The infusion of flaxseed is frequently prescribed as a demulcent in diseases of the lungs, bowels, and urinary organs. The bruised seeds are much employed in conjunction with other substances, for emollient cataplasms.

MUCILAGO SEMINUM CYDONIORUM.

The seeds of the quince afford a very large quantity of a fine, colourless mucilage, which, as in the flaxseed, resides principally in their external or cortical portion.

It is readily extracted from the unbruised seeds even by cold water. One part of quince seeds, with three parts of cold water, will form a mucilage as thick as

* Pfaff's Materia Medica, B. i. s. 123.

that which is formed by equal parts of gum arabic and water. This mucilage forms a copious flocculent precipitate, of a clear white colour, with the acetate of lead, and the chlorite of tin. The mucilage obtained from the bruised seeds, is not pure; it is mixed with a portion of albumen, which is very abundant in the kernel of the seed, and also with a small quantity of farina. In boiling water, they give out an exceedingly large quantity of mucilage, one part of the seeds being sufficient to impart to forty-eight parts of water, the consistence and appearance of the albumen of an egg.*

This mucilage is almost exclusively used as an external remedy. In acute ophthalmia, it is a very excellent application. It is sometimes employed in cases of this kind, in union with sugar of lead; but such a combination does not appear to be a proper one, as it forms a pretty copious precipitate with this salt.

Besides the substances already mentioned under this head, there are a variety of other articles which are employed for their demulcent properties. Amongst these the following are the principal: Radix althæa, semen psyllii, herba et flores malvæ, malvæ rotundifolia, a plant exceedingly common in the United States, and medulla sassafras. This latter, the pith of the young branches of the sassafras, forms a beautiful, colourless, and pure mucilage by decoction, which has been much recommended as an application to the eye in acute ophthalmia.

OLEUM OLIVÆ.—OLIVE OIL.

Olive oil is of a pale yellowish colour, without odour, and of a pleasant bland taste. When perfectly pure it congeals at a temperature of 38° of Fahrenheit. With

* Pfaff's Mat. Med. B. i. s. 122.

the exception of the oil of almonds, it is the lightest of the fat oils, having a specific gravity of no more than 0.915. It is composed of forty-nine parts of carbon, thirty of oxygen, and twenty-one of hydrogen. It possesses less activity as a laxative than the oleum ricini; it is, nevertheless, in many cases, a very useful aperient, and is much employed for this and other purposes in medicine.

This oil was very extensively used by the Roman physicians as an external application in the cure of diseases. Celsus, Galen, and Aetius were much in the habit of employing oily frictions; and have left us some excellent observations in relation to the cases in which they are applicable.

A good deal has been said of the utility of frictions with this oil in dropsy. Cases of ascites are said to have been cured by such frictions assiduously applied to the abdomen.* Dr. Donald Monro informs us that although unsuccessful in his attempts to cure ascites in this way, he found it effectual in some cases of anasarca.†

It is probable, however, that very little, if any thing, is to be ascribed to the oil in such cases. It is well known that frictions, whether with or without any intermediate substance, have a considerable tendency to excite the activity of the absorbents; and it is not unlikely that all the good that has ever been done in this disease by oily frictions might have been obtained by frictions with the dry and bare hand.

This oil has also been much recommended, both as an internal and an external remedy against the effects of the bites of venomous snakes and insects.‡ It does

* Oiver, Stork, Burdach, &c.

† Alibert. Nouveaux Elémens de Thérapeutique, vol. ii. p. 252.

‡ Abr. Vater diss. de antidoto novo adversus viperarum morsum præstantissimo. Viteb. 1763. Ejusdem. Progr. pro olei olivarum efficaciam et virtutem adversus morsum animalium venenatorum confirmat. 1751.

not, however, appear to be entitled to any attention for its supposed remediate virtues in cases of this kind.

The external application of warm olive oil has been much employed as a remedy against the plague. Baldwin especially speaks in the highest terms of this practice. According to this writer the patient is to be briskly rubbed all over with the warm oil, which is to be repeated every day, and assisted by warm drinks and the heat of a bed, until a copious perspiration is excited. This practice is only effectual when early employed.*

To blunt the activity of certain poisonous substances brought into the stomach, olive oil is of unquestionable utility. Its powers, in common with other oily or fat substances, to prevent the deleterious effects of lead upon the system, are well known to those who are much exposed to the influence of this poison, it being a common practice among such persons to fortify themselves against its effects, by the daily use of olive oil, or some other fat or oily substance.

Burdach says,† that it should never be given where narcotic poisons have been swallowed, since, as he observes, it is not only useless, but absolutely injurious in cases of this kind.

Olive oil may be advantageously employed as an aperient in cases of habitual costiveness, and in colica pictonum. It operates, commonly, with considerable promptness and certainty, and may be conveniently exhibited with other articles of this class, as manna, the resin of jalap, &c.

In ileus it is said to be an exceedingly good remedy given either alone or in combination with opiates.

* Osservazioni circa un nuovo specifico, contra la peste, ritrovato e fatto sperimentare, da 9. Baldwin. 1800.

† Arzneimittellehre, B. ii. S. 118.

Gallesky recommends it to be given in the dose of a table-spoonful every hour until the bowels are moved and the pains abate.

Malacarne* has published a memoir on the internal employment of olive oil in wandering arthritic pains. He gave from one to two pounds of this oil, having previously added a portion of culinary salt to it, in the course of two or three days. He speaks very favourably of this practice.

This oil has also been recommended as a vermifuge; its powers in this way are, however, of no consequence.

Olive oil is often adulterated by the oil of poppy seeds. This fraud may be readily detected "by exposing the oil to a freezing temperature; when the olive oil will congeal, while that of the poppies will remain fluid; and since those oils which freeze with most difficulty are most susceptible of rancidity, the admixture of poppy oil must be regarded as injurious; it also deserves notice, that the peculiar habitudes of *oil of olives* with *per-nitrate* of *mercury*, offer a distinguishing character, by which the adulteration of the oil may be satisfactorily detected; for if the *per-nitrate* (made by dissolving six parts of the metal in 7.5 of nitric acid of sp. grav. 1.36, at a common temperature) be mixed with olive oil, the mixture, if kept cold, will, in the course of a few hours, become solid, whereas if it has any admixture of the oil of grains, it will not undergo such a change. The contamination derived from lead, which is frequently immersed in the oil for the purpose of removing its rancidity, may be detected by shaking one part of the suspected sample with three parts of water, impregnated with sulphuretted hydrogen, in a stopped vial."†

* Samlung Auserlesener Alhandl. Bd. xii. St. iv. S. 579.

† Paris's Pharmacologia.

CHAPTER XX.

ESCHAROTICS.

These are substances capable of destroying the texture of animal matter. They are employed to remove excrescences; to open abscesses; to form artificial ulcers; and to change the condition of ulcerated surfaces. They are usually divided into *eroding escharotics*, and *caustic escharotics*. But the only foundation for this division appears to be the difference in the degree of their activity.

POTASSA FUSA.—COMMON CAUSTIC.

This is the most powerful escharotic with which we are acquainted. As it is usually met with in the shops, it consists of small cylindrical pieces, of a white colour externally, and a pale purple colour internally. It is deliquescent, and dissolves readily both in water and alcohol. It is a hydrated protoxide of potassium. This caustic is chiefly employed in forming issues, opening abscesses, and in destroying the callous edges of ulcers. Being rapid and powerful in its effects, and very deliquescent, considerable care is required in its application, lest it destroy the parts to a greater extent than is necessary or proper. The action of caustic potash may, however, be readily arrested by applying vinegar to the part upon which it is rubbed, and thus neutralizing and destroying its properties.

The formation of a superficial eschar by means of this caustic, is attended with particular advantage in several affections. In paronychia, before suppuration has taken place, it is an excellent application to put a stop to the further progress of the disease. For this purpose, the caustic is to be applied so as to form a thin eschar immediately over the spot where the pain is felt most severely. This practice originated with Dr. Perkin, of this city. A similar practice may also be used with much advantage in buboes of an indolent character. Of the use of caustic issues in diseases of the spine, phthisis, tetanus, &c. I have already spoken, when treating of issues and setons, in the chapter on Epispastics.

NITRAS ARGENTI.—LUNAR CAUSTIC.

This metallic preparation has already been described under the head of Tonics;* and it only remains in this place to notice more particularly its powers as an escharotic. The nitrate of silver is much less powerful as a caustic than the preceding article; but in the majority of cases where such applications are indicated, it is decidedly preferable to the potash, both on account of its greater mildness, and its being less apt, from the property it possesses of coagulating animal matter, to spread and form extensive eschars. Where the surface of an ulcer requires an application of this kind, the lunar caustic is by far the best, as it is more apt than any other articles of this class to give a disposition to the new granulations to heal. A weak solution of this substance forms an excellent lotion to excite the weak granulations of fungous ulcers; it may also be employed with much advantage as an injection

* Vol. i. p. 291.

in gonorrhœa; and in puriform discharges from the ear. In the latter of these affections, a solution of this substance injected into the ear, is said to be particularly useful; it was, I believe, first recommended by Mr. Saunders, and lately Mr. Curtis, surgeon-aurist to the Prince Regent, has published several cases in which it was successfully employed.* In one of the cases which he reports, he states, that "the patient began by using ten grains in four ounces of water, and I increased it to the extent of thirty-five grains, which completely healed the parts: and I had the further satisfaction, at the same time, to find her hearing restored. It may be necessary, perhaps, to mention, that it took nine months to complete a cure."

ARSENICI OXYDUM.

The white oxide of arsenic is a very powerful escharotic. Its employment in this respect has been chiefly confined to the treatment of cancers, and for which purpose it seems to be the best escharotic we possess. When applied to an ulcerated surface of this kind, it often destroys the diseased parts very deeply, and seldom extends its destructive effects to those which are healthy. Richter states, that he employed the arsenic as an escharotic in cancerous ulcerations of the face, with decided benefit. It is, however, much too powerful to be employed for purposes of this kind without being mixed with other articles of a mild character. Various substances have been used for this purpose, such as sulphur,† hemlock, orobanche virginiana, sanguis dragonis, &c. The *paste arsenicale* was formerly much employed by the French surgeons as an escharotic

* London Medical and Phys. Journal for May, 1819.

† See formula for Bernard's Mixture, vol. i. p. 295.

for cancer. This mixture consists of seventy parts of cinnabar, twenty-two of sanguis drachonis, and eight of white oxide of arsenic, formed into a paste with saliva at the time it is applied. It has also been used in the form of solution, which is an excellent mode of applying it when we wish merely to destroy the surface of the ulcer. If it create very great pain we need only wash the part with a solution of opium.

In phagedæna gangrænosa, which, according to the observations of Mr. Blackadder, "is always primarily a local disease, produced by a specific morbid poison, a solution of arsenic applied to the affected part has been found to produce the happiest effects."*

ALUMEN EXSICCATUM.

When alum is exposed to heat, it yields its water of crystallization, enters into a sort of fusion, and finally dries into a white, spongy, and very light substance, which possesses considerable escharotic powers. When prepared for this purpose the heat employed to fuse it must not be too intense or very long continued, lest the alum be deprived of too much of its acid, upon an excess of which its escharotic powers depend.† This substance may be used with very good effect in venereal chancres, as well as in other ulcers having weak and spongy granulations. It is very frequently employed to destroy fungous excrescences, &c.

HYDRARGYRI NITRICO-OXIDUM.

The subnitrate of mercury, or red precipitate, is much employed as an escharotic in weak and fungous

* Observations on Phagedæna Gangrænosa, by Home Blackadder. Lond. 1818.

† Paris.

ulcers. It is not very powerful in this way, and seldom occasions much pain on being applied to an ulcer. It is used either by itself, sprinkled on the surface of the sore, or in the form of an ointment, in which way it is an excellent stimulating application to weak and spongy granulations.

HYDRARGYRI OXYMURIAS.

The corrosive sublimate is powerfully escharotic, but as its action in this way is exceedingly painful, it is very seldom employed for this purpose. A solution of it in lime-water, the aqua phagedenica already mentioned in a former part of this volume, forms a very useful lotion in foul and indolent ulcers, venereal sores, cutaneous affections of a local character, &c. Justamond recommends a powder composed of equal portions of sublimate and arsenic as one of the best escharotic applications to venereal and cancerous ulcerations. When thus combined, he says, they produce less pain than either of these articles by themselves.

SULPHAS CUPRI.

The sulphate of copper possesses pretty active escharotic properties, and may be employed with very good effect in venereal chancres, as well as in other sores having weak and spongy granulations. It may be used either in substance or in solution. A crystal of it cut into a pointed shape and applied to a chancre for a few moments, will, in general, answer every purpose that can be expected from such applications. A weak solution, consisting of about three grains to an ounce, forms an excellent stimulating application to foul and languid ulcers.

MURIATIC ACID.

I do not know that this acid has ever been used as an escharotic. In indolent ulcers, however, it occasionally proves an excellent stimulant; and in the slow caries of some of the spongy bones it may be employed with great advantage. I owe this latter idea to my friend, Dr. M'Clellan, who has lately been induced, from speculative views, to prescribe the diluted muriatic acid in several cases of this kind, at the Philadelphia Almshouse and elsewhere. In one instance, he informs me, a very troublesome caries of the os calcis was speedily and effectually cured by the daily repetition of injections of the diluted muriatic acid; and in several other cases, important, though not equal, relief was obtained from the same remedy. Indeed, it will not prove difficult to conceive that this acid may be introduced into a fistulous ulcer, in so weak a state of dilution as not to injure the healthy surfaces, and yet prove sufficiently strong to dissolve the dead bony spiculæ, and to excite the morbid parts to granulation and cicatrization.

NITRIC ACID.

This acid has frequently been employed by empirics for the destruction of tumours, and perhaps it may be considered as the most useful as well as the most powerful of all the escharotics, whenever an immediate destruction of diseased parts is required. By the sudden and powerful excitement which it creates, it produces the advantageous effect of subverting the morbid train of action in the surrounding vessels, more extensively and permanently than any other of this class of remedies. Mr. Welford, in the eleventh number of the Medico-Chirurgical Transactions, speaks very highly of it as an escharotic, in a species of

sloughing ulcer which occurred among the prostitutes of London. Dr. M'Clellan, of this city, has also resorted to it, in consequence of Mr. Welbank's representations, with the most decided advantage, in three different cases. In one of Dr. M'Clellan's patients, who came under my notice last summer, a very large sloughing ulcer of the penis, which had been making a rapid and destructive progress, was immediately arrested, and a speedy cicatrization effected, without the aid of any constitutional treatment. In the Philadelphia Alms-house a similar case, which alternately put on a phagedenic and sloughing appearance, and which had long resisted every other mode of treatment, was effectually subdued by the same remedy, under the care of Dr. M'Clellan. The method of using the nitric acid in such cases is, to smear all the sound parts in the immediate vicinity of the ulcer with basilicon ointment, and then to apply pledgets of lint, dipped in the strong acid, over the morbid surface. The acid should not be diluted. By pressing the lint firmly upon the ulcer a few seconds, the whole surface will be deadened, and a deep slough remain, underneath which healthy suppuration and granulations will ensue.

INDEX.

The Numerals refer to the Volume, the Figures to the Pages; where the Figures stand alone, the First Volume is always intended.

Abortiva, 442
Absorption of medicines, 12
Accasia gummi, ii. 419
Acetas potassæ, ii. 325
cupri, 330
Acetate of lead, 393
zinc, 341
Acid, carbonic, antilithic, ii. 363
muriatic, ii. 468
nitric, ii. ib.
Acids, mineral, antilithic, ii. 344
Acidum nitricum, astringent, 415
sulphuricum, astringent, 419
Aconitum napellus, ii. 85
Æther, nitric, ii. 327
Æther, sulphuric, antispasmodic, ii. 155
Æthiops mineral, ii. 429
Alcohol, ii. 182
Allium sativum, rubefacient, ii. 266
antispasmodic, ii. 148
expectorant, ii. 436
Aloes extractum, 157
emmenagogue, 439
used in habitual costiveness, 160
Alum, 404
used in colica pictonum, 405
exsiccatum, ii. 466
Amber, oil of, ii. 158
Ammoniæ aqua, ii. 268
Ammonia, an antidote of prussic acid, ii. 130
carbonas, stimulant, ii. 163
diaphoretic, ii. 215
rubefacient, ii. 268
Ammoniacum, ii. 138
expectorant, ii. 439
Ammoniated copper, 326
Angustura bark, 283
Antacids, 237
Anthelmintics, 208
Anthemis nobilis, 311
Antilithics, ii. 342
Antimony, as an emetic, 61
denounced by the medical faculty of Paris, 62
crude, ib.
used in cutaneous disorders, 63
in scrofulous diseases, ib.
Antimonii sulphuretum præcipitat. 64
useful in rheumatism, 65
tartarizatum, 66
Antispasmodics, ii. 131
Antimonial preparations, diaphoretic, ii. 203
Antimonum tartarizatum, epispastic, ii. 257
Apoplexy, emetics used in, 44
cathartics used in, 128
Apocynum androsæmifolium, 99
Aqua calcis, 241, antilithic, 357
Argentum, 347
Aristolochia serpentaria, tonic, 280
Arsenicum, tonic, 356
used in intermittents, 360
in typhus, 363
in rheumatism, ib.
in hooping-cough, 364
in hemicrania, 365
in sick headache, ib.
in ulcer of the tongue, 366
in cutaneous disorders, 367
mode of administering it, 368
its antidotes, 369
escharotic, ii. 456
Artemesia santonica, 222
Arum triphyllum, ii. 437
Assafœtida, ii. 132
used in caries, ii. 135
expectorant, ii. 439
Asarabacca, ii. 271
Asarum, errhine, ii. ib.
Asclepias tuberosa, ii. 219
Asthma, cinchona used in, 270
utility of emetics in, 43

Asthma, spider's web, used in, ii. 120
prussic acid, used in, ii. 129
Astringents, 371
used in dysentery, 372
in leucorrhœa, 373
injections in gonorrhœa, 374
Atropa belladonna, ii. 71
used in hooping-cough, ii. 73
in tic doloureux, ii. 75
Aurum, tonic, 352

Bacher's pills, 430
Balsam copaiva, ii. 306
useful in chronic bronchitis, ii. 310
tolutanum, ii. 441
Peruvian, ii. 442
Barytes, 413
Beach-drop, 384
Bear-berry, lithontriptic, ii. 364
Bernard's arsenical caustic, 283
Bismuth subnitras, 344
Bitter-sweet, ii. 92
Black hellebore, 203
pepper, ii. 189
Blackberry root, 386
Blood, difficulty of detecting foreign substances in, explained, 14
Blood-root, 97
Blisters, ii. 237
Blue vitriol, 102
mercurial pill, ii. 410
Bonplandia trifoliata, 283
Boneset, ii. 216
Bubon galbanum, ii. 136
Bucha leaves, 316
Burgundiæ pix, ii. 270
Butterfly-weed, ii. 219
Butter-nut, 206

Cabbage-tree, 220
Calcariæ lapides, antacid, 239
Calcis aqua, antacid, 241
lithontriptic, ii. 357
Calomel, 200
sialagogue, ii. 423
Calx, astringent, 409
Cambogia, 153
Camomile flowers, 311
Camphora, anthelmintic, 227
narcotic, ii. 44
rubefacient, ii. 268
expectorant, ii. 440
used in typhus, ii. 47
in puerperal fever, ii. ib.
in remittent fever, ii. 48
in intermittents, ii. ib.
in rheumatism, ii. 49
in epilepsy, ii. 50
in mania, ii. ib.
in nymphomonia, ii. ib.
in chorea, ii. 51
Camphora used in eclampsia, ii. 51
in strangury, ii. 53
in dysmenorrhœa, ii. 54
Cancrorum oculi, 240
Cantharides, emmenagogue, 438
epispastic, ii. 250
rubefacient, ii. 269
diuretic, ii. 296
used in dropsy, ii. ib.
phthisis, ii. 297
Capsicum, rubefacient, ii. 265
annuum, ii. 185
Carbonas ammoniæ, stimulant, ii. 163
sodæ et potassæ, lithontriptic, ii. 350
potassæ, expectorant, ii. 440
et sodæ, expectorant, ii. 441
Carbonic acid, lithontriptic, ii. 363
Caries, assafœtida used in, ii. 135
Carrot, wild, ii. 318
Caryophilli aromat. ii. 187
Cascarilla, 298
Marilandica, 204
Castor, ii. 145
Catarrh, opium used in, ii. 24
Catechu extractum, 390
Cathartics, 108
differ in their operation, 109
diminish the action of the heart and arteries, 110
promote absorption, 111
excite the portal circulation, 113
equalize the circulation, ib.
used in typhus fever, 116
the exanthemata, 119
scarlatina, 120
dysentery, 121
puerperal fever, ib.
acute rheumatism, 124
gout, 125
hydrocephalus, 126
apoplexy, 128
hypochondriasis, 129
hysteria, 130
chorea, 131
tetanus, 132
marasmus, 134
chlorosis, ib.
dropsy, 136
Caustic, lunar, ii. 464
Cayenne pepper, ii. 265
Camomile, 311
Centaury, 307
Chenopodium anthelminticum, 218
Chironia angularis, 307
Chimaphila umbellata, ii. 321
Chirac's experiments on the mechanism of vomiting, 23
Chloride of lime, 410
Cholera, opium used in, ii. 29
Chorea, treated by opium, ii. 37
Cinchona, 246

Cinchona, pale, or condaminea, 247
yellow, or ovalifolia, 249
red, or magnifolia, 251
caribæa, ib.
floribunda, 252
chemical composition, 253
pharmaceutical preparations, 255
used in intermittents, 260
remittents, 264
typhus, 265
rheumatism and gout, 266
Cinchona, used in erysipelas, 268
measles, ib.
scarlatina anginosa, ib.
pertussis, 270
asthma, ib.
pulmonary consumption, ib.
dyspeptic phthisis, 272
scrofula, 273
dropsy, 274
hemicrania, ib.
mode of exhibiting it, 275
Cinnabar, ii. 428
Citrate of morphia, ii. 22
Classification, synopsis of, viii.
Cloves, ii. 187
Colica pictonum, opium in, ii. 34
Colocynthides, pulpa, 165
Colchicum, diuretic, ii. 292
Columba, 287
Common caustic, ii. 463
Conferva helminthocordon, 235
Conium maculatum, ii. 61
Consumption, cured by inhaling oak bark, 377
Constipation, cured by emetics, 48
Convolvulus scammonia, 162
extract, how prepared, ii. 83
Copperas, 318
Cornus florida, 303
Corrosive sublimate, sialagogue, ii. 416
Cortex querci, 375
Cortex sambrici interior, 207
Cowhage, 221
Cremor tartari solubilis, 198
Creta præparata, 239
Croton eleutheria, 298
tiglium, 173
Croup, emetics used in, 33
Cubebs, ii. 311
Cucumis colocynthus, 165
Cupri sulphas, emetic, 102
tonic, 323
escharotic, ii. 467
Cuprum, 322
Cuprum ammoniacum, 326
Cusparia febrifuga, 283
Cynanche laryngea, cured by emetics, 34

Daphne mezereum, ii. 225
Darwin's opinion of the modus operandi of emetics, 24
Datura stramonium, ii. 80
Daucus carota, ii. 318
Deadly nightshade, ii. 71
Demulcents, ii. 451
Diabetes, treated by emetics, 47
opium used in, ii. 30
Diaphoretics, ii. 191
used in fevers, ii. 195
pneumonia, ii. 197
gout, ii. ib.
bowel affections, ii. 198
dropsy, ii. 201
rules for administering them, ii. 202
Digitalis purpurea, narcotic, ii. 97
its effects, ii. 98
used in phthisis, ii. 99
epilepsy, ii. 103
mania, ii. ib.
spasmodic asthma, ii. 104
diuretic, ii. 282
Diuretics, ii. 274
their operation in dropsy, ii. 277
their action promoted by bleeding, ii. 276
used in gout, ii. 278
chronic dysentery, ii. 279
pulmonary affections, ii. 280
ulcers of the legs, ii. ib.
diseases of the urinary organs, ii. ib.
Dogwood, 303
Dolichos pruriens, 221
Dover's powders, 209
Dropsy, treated by emetics, 47
cathartics used in, 136
cinchona used in, 274
opium used in, ii. 30
cantharides used in, ii. 296
Dysentery treated by emetics, 39
cathartics used in, 121
astringents used in, 372
opium used in, ii. 27
Dyspepsia, the utility of emetics in, 46
Dyspeptic phthisis, cinchona used in, 272
Dysmenorrhœa, camphor used in, ii. 54
Dysury, cured by tobacco, ii. 108

Eclampsia, camphor used in, ii. 51
Elaterium, 168
used in dropsy by Ferriar, 170
Emetics, 23
their modus operandi, 25
diminish the energies of the brain, 29
their use in typhus, ib.
malignant fever, 30
intermittents, 31

Emetics, their use in scarlatina, 32
erysipelas, ib.
puerperal fever, 33
croup, ib.
cynanche laryngea, 34
peripneumonia notha, 35
pneumonia biliosa, ib.
acute rheumatism, 36
gout, 37
acute ophthalmia, ib.
gutta serena, ib.
hæmoptysis, ib.
menorrhagia, 39
dysentery, ib.
mania-potu, 40
hysteria, 42
asthma, 43
hooping-cough, 44
apoplexy, ib.
epilepsy, 45
indigestion, 46
dropsy, 47
diabetes, ib.
jaundice, 48
herniæ humoralis, ib.
constipation, ib.
Emetic tartar, 66
epispastic, ii. 257
Emetin, contained in ipecac. 51
mode of obtaining it, ib.
Emmenagogues, 422
their modus operandi, 423
Enteritis, opium used in, ii. 20
Epilepsy, cured by digitalis, ii. 103
cured by the sugar of lead, 398
Epilepsy, treated by opium, ii. 38
treated by camphor, ii. 50
Epispastics, ii. 237
their effects, 238
used in mortification, ii. 247
spasmodic affections, ii. 248
epistaxis, ii. 247
erysipelas, 246
dysentery and cholera, ii. 245
Epsom salts, 193
Erigeron heterophyllum, ii. 319
Ergot, 442
Errhines, ii. 270
Escharotics, ii. 463
Eupatorium perfoliatum, ii. 216
Euphorbia ipecacuanha, 91
an excellent emetic, ib.
Expectorants, ii. 431

Fern, male, 223
Ferri phosphas, 320
subcarbonas, 317
sulphas, 318
Ferriar's mode of using elaterium, 172
Ferro ferrocyanas, 321
Ferrum, 312
used in anæmia, 316
Ferrum ammoniatum, 319
tartarizatum, ib.
Fevers, diaphoretics used in, ii. 195
Flaxseed, ii. 458
Flores martialis, 319
Flowers of zinc, 333
Folia-sennæ, 147
Foxglove, purple, narcotic, ii. 97
diuretic, ii. 284

Galbanum, ii. 136
Gallæ, 379
Gall, ointment for piles, 381
Gamboge, 153
used in dropsy by Ferriar, 154
Garlic, antispasmodic, ii. 148
expectorant, ii. 436
rubefacient, ii. 266
Gastritis, opium used in, ii. 20
Gentiana lutea, 291
Geoffrea inermis, 220
Geranium maculatum, 382
Ginger, ii. 188
Glauber's salts, 191
Glycyrrhiza glabra, ii. 451
Gold, tonic, 352
used in syphilis, 353
mode of employing it, 354
Gonorrhœa, astringent injections used in, 374
Gooch's anodyne in mania, i. 58
Gout, treated by emetics, 37
cathartics used in, 125
diaphoretics used in, ii. 197
Guaiacum officinale, ii. 221
Gum ammoniacum, ii. 138, 438
arabic, destroys the taste of ipecacuanha, 60
assafœtida, ii. 132, 439
Gummi acacia, ii. 455
tragacanth, ii. 457
Gutta serena, emetics used in, 37

Hæmatoxylum campechianum, 385
Hæmoptysis, emetics employed in, 37
Hæmorrhages, opium in, ii. 33
Hartman's emmenagogue pill, 433
Heleborus niger, 203
Helenium autumnale, errhine, ii. 272
Hemicrania, cinchona used in, 274
Hernia humoralis, treated by emetics, 48
Herpetic eruptions, dulcamara used in, ii. 93
Hooping-cough, emetics used in, 44
cured by belladonna, ii. 74
prussic acid, ii. 127
Hop, ii. 55
Hydrargyrus, an anthelmintic, 232, ii. 369

Hydrargyrus, sub-murias, sialagogue, ii. 423
nitrico-oxyd, sialagogue, ii. 425
Hydrargyrum, præcipit. alb. sialagogue, ii. 427
sulph. rub. sialagogue, 428
sulph. nigrum, sialagogue, ii. 429
nitro-oxyd, escharotic, ii. 466
oxymurias, ii. 416, 467
Hydrocephalus, cathartics used in, 126
Hydrophobia, treated by opium, ii. 40
Hydro-cyanic acid, 121
Hyoscyamus niger, ii. 57
Hyoscyama, ii. ib.
used in mania, ii. 60
Hydrocyanate of zinc, 343
Hypochondriasis, cathartics used in, 129
Hysteria, treated by emetics, 42
cathartics used in, 130
treated by opium, ii. 38
chronic, spider's web used in, ii. 119
Humulus lupulus, ii. 55
lithontriptic, ii. 367

Jalapæ radix, 136
James's powder, 77
Jamestown weed, ii. 80
Juniperus sabina, 430
Jaundice, treated by emetics, 48
Jerusalem oak, 218
Impotency, cantharides useful in, ii. 301
Indian tobacco, 85
useful in asthma, 86
turnip, ii. 437
Indigenous plants, 106
Indigestion, opium used in, ii. 32
Inhalations, ii. 407
Intermittents, emetics used in, 46
opium used in, ii. 19
camphor used in, ii. 48
cured by spider's web, ii. 119
Ipecacuanha, 49
employed in dysentery, 53
in hæmorrhages, 56
in asthma, 57
as an anti-emetic, 58
in habitual vomiting, ib.
as an emmenagogue, 59
in indigestion, ib.
mode of prescribing it, ib.
peculiar taste destroyed by gum arabic, 60
American, 91
increases the effects of jalap, 138
diaphoretic, ii. 209
Iron, 312
sulphuret of, used in dropsy, 316
Juglan's cathartica, 206
Juniperus sabina, 431
Issues, ii. 260

Kali preparatum, ii. 323
Kermes mineral, 65
Kino, 387

Lactucarium, ii. 43
Lapides calcariæ, antacid, 239
Laurus sassafras, ii. 230
Lead, acetate of, 393
Leucorrhœa, astringents used in, 373
Lime, 409
Lime-water, antilithic, ii. 357
Lithontriptics, or antilithics, ii. 342
Liquor morphi citratis, ii. 15
argenti muriatico, 351
cupri ammoniato-muriatici, 329
Liriodendron tulipifera, 308
Lobelia inflata, 85
used in asthma, 86
in croup, 88
Log-wood, 385
Lumbricoides, 210
Lunar caustic, tonic, 348
escharotic, ii. 464
Lytta cantharis, emmenagogue, 250
vesicatoria, epispastic, ii. 301
diuretic, ii. 300
vittata, ii. 255
marginata, ii. ib.

Madder, 436
Magnesia, a cathartic, 185
used as an antidote, 191
produces dangerous concretions in the bowels, 190
antacid, 241
lithontriptic, ii. 354
Magnesia alba, 242
Magistery of bismuth, 344
Male fern, 223
Malignant fever, emetics used in, 30
Mania, treated by camphor, ii. 50
digitalis used in, ii. 103
prussic acid used in, ii. 125
Mania-a-potu, treated by emetics, 40
treated by opium, ii. 35
Marasmus, cathartics used in, 134
May-apple, 205
Measles, cinchona used in, 268
Melia azedarach, 217
Meloe niger, ii. 256
Menorrhagia, treated by emetics, 39
Mentha pulegium, 434
Mercurial preparations, emetic, 106
ointment, ii. 412
Mercury, ii. 369
absorbed into the circulation, ii. 370
its morbid effects, ii. 372
how its effects may be promoted, ii. 374, 375
its immediate effects, ii. 377
used in yellow fever, ii. 379

Mercury, used in bilious fever, ii. 380
in intermittents, ii. ib.
in typhus, ii. ib.
in hepatitis, ii. 383
in pneumonia, ii. 384
in cynanche trachealis, ii. ib.
in cynanche maligna, ii. 386
in phthisis, ii. 387
in rheumatism, ii. 389
in ophthalmia, ii. 390
in dysentery, ii. 391
in diarrhœa, ii. 393
in colica pictonum, ii. 394
in dyspepsia, ii. ib.
in hypochondriasis, ii. ib.
in mania, ii. 395
in tetanus, ii. ib.
in dydrophobia, ii. 396
in dysphagia, ii. 398
in gutta serena, ii. 399
in dropsy, ii. ib.
in hydrocephalus, ii. 400
in cutaneous diseases, ii. 401
in scrofula, ii. 402
in venereal disease, ii. 403
rules for using it, ii. 407
Metallic silver, 347
Mezereum, ii. 225
Mimosa catechu, 390
Mineral acids, antilithic, ii. 359
Modus operandi, in general, 11
Momordica elaterium, 168
Monardæ oleum, ii. 267
Morphia, ii. 6
Mortification, treated by opium, ii. 41
cured by blisters, ii. 246
Moschus moschiferus, ii. 140
Mustard, rubefacient, ii. 263
Muriatis ferri tinctura, ii. 328
Muriate of gold, 354
of barytes, 413
Musk, ii. 140

Narcotics, ii. 3
their effects, ii. 5
Neuralgia, cured by belladonna, ii. 76
Nicotiana tabacum, errhine, ii. 271
diuretic, ii. 300
Nightshade, deadly, ii. 71
Nicotiana, narcotic, ii. 107
its poisonous effects, ii. ib.
used in dropsy and dysury, ii. 108
injections of it, ii. 109
escharotic, ii. 465
Nitrate of potash, diaphoretic, ii. 212
Nitrate of silver, 347
Nitre, ii. 212
Nitric acid, 415
used in tinea capitis, 417
epispastic, ii. 256
escharotic, ii. 468
Nitro-muriatic acid, 417
Nux vomica, ii. 111
Nymphomania, camphor useful in, ii. 50

Oak bark, 375
inhaled in phthisis, 376
Obstructions of the bowels, turpentine used in, ii. 174
Oculi cancrorum, 240
Oleum succini, ii. 158
monardæ punctatæ, ii. 267
croton, 173
ricini, 176
olevarium, ii. 459
used in ascites, ii. 460
ileus, ii. 461
wandering arthritic pains, ii. 462
terebinthinæ, anthelmintic, 228
useful in gastric worms, ib.
rubefacient, ii. 266
Opium, ii. 5
its component parts, ii. 6
its effects, ii. 10
used in typhus, ii. 17
intermittents, ii. 18
gastritis and enteritis, ii. 20
rheumatism, ii. 22
chronic catarrh, ii. 24
pneumonia, ii. 25
phthisis, ii. 26
small-pox, ii. ib.
scarlatina, ii. ib.
dysentery, ii. 27
cholera, ii. 29
dropsy, ii. 30
diabetes, ii. 31
indigestion, ii. 32
hæmorrhages, ii. 33
colica pictonum, ii. 34
mania-a-potu, ii. 35
tetanus, ii. 36
chorea, ii. 37
epilepsy, ii. 38
hysteria, ii. ib.
hydrophobia, ii. 39
venereal complaints, ii. 40
mortification of the toes, ii. 41
Opium and hyoscyamus, useful in mania, ii. 58
Ophthalmia, acute, cured by emetics, 37
Orobanche virginiana, 84
Oyster shells, powdered, antacid, 240
Oxydum zinci, 237
Oxide of zinc, 333

Paralysis, cured by nux vomica, ii. 113
Parsley, ii. 315
Potassæ carbonas, expectorant, ii. 440
Pennyroyal, 441

Pepper, red, ii. 185, 265
rubefacient, ii. ib.
black, ii. 189
Peripneumonia notha, use of emetics in, 35
Pertussis, cinchona used in, 270
Peruvian bark, 246
Phosphate of iron, 320
Phosphorus, ii. 178
Phthisis, opium used in, ii. 26
cinchona used in, 270
digitalis used in, ii. 99
treated by prussic acid, ii. 125
cantharides used in, ii. 297
Pilulæ hydrargyri, ii. 410
Pink root, 214
Pipsissewa, ii. 321
Pix burgundiæ, rubefacient, ii. 270
Piper cubeba, ii. 311
nigrum, ii. 189
Pleurisy root, ii. 219
Pliny's notice of resinous inhalations, ii. 446
Phthisis, opium used in, ii. 26
diaphoretics used in, ii. 197
biliosa, use of emetics in, 35
Podophyllum peltatum, 205
Poison oak, ii. 116
Polygala senega, 437, ii. 434
Polygonum hydropiperoides, 441
Polypodium felix mas, 223
Polecat weed, ii. 153
Pomegranate, 225
Potassæ carbonas, antacid, 242
sub-carbonas, ii. 350
tartras, 199
Potash, nitrate, diaphoretic, ii. 212
Potassa fusa, ii. 463
Potato fly, ii. 255
Precipitated sulphuret of antimony, 64
Preparations of ammonia, ii. 215
Prickly ash, ii. 231
Pride of China, 217
Prunus virginiana, 300
diminishes the pulse, 301
used in chronic hysteria, 302
Prussic acid, ii. 121
its effects, ii. 123
its antidote, ii. 130
used in mania, ii. 125
in phthisis, ii. ib.
nervous coughs, ii. 126
hooping-cough, ii. 127
asthma, ii. 128
chronic rheumatism, ii. ib.
Prussiate of iron, 321
used in intermittents, 322
Puerperal fever, emetics used in, 33
cathartics used in, 121
camphor used in, ii. 47
convulsions, camphor used in, ii. 51
Pulmonary diseases, diaphoretics used in, ii. 197
Pulegium, 441
Punica granatorum, 225

Quassia excelsa, 294
simarouba, tonic, 296
Querci cortex, 375
Quince seeds, ii. 458
Quinine, 275

Radix jalapæ, 136
rhæi, 140
Rad. hellebori nigri, 425
ipecacuanha, diaphoretic, ii. 209
polygala, expectorant, ii. 434
scillæ, expectorant, ii. 435
diuretic, ii. 289
Rad. violæ odoratæ, 100
Red precipitate, sialagogue, ii. 425
Remittents, bark used in, 264
camphor used in, ii. 48
Rhæum palmatum, 140
Rheumatism, acute, emetics good in, 36
cathartics used in, 124
opium used in, ii. 22
camphor used in, ii. 49
prussic acid used in, ii. 128
cured by turpentine, ii. 173
and gout, cinchona used in, 266
Rhus toxicodendron, ii. 116
Ricini oleum, 176
Robinia pseudacacia, 102
Rosmarinus officinalis, 434
Rubefacients, ii. 202
Rubia tinctorum, 436
Rubus villosus, 386

Sabina, 431
Saffron, meadow, diuretic, ii. 292
Salix alba, 305
Sal diureticus, ii. 325
Saltpetre, ii. 326
Sanguinaria canadensis, 95
Saponaria officinalis, ii. 233
Sarsaparilla, ii. 227
Sassafras, ii. 230
Scabiosa, ii. 319
Scamony, 162
Scarlatina, emetics used in, 32
cinchona used in, 268
opium used in, ii. 26
simplex, cathartics used in, 120
anginosa, cinchona used in, 268
Scilla maritima, as an emetic, 93
diuretic, ii. 289
expectorant, ii. 435
Secale cornutum, 442
Sem. sinapis, rubefacient, ii. 263
colchici, in rheumatism, ii. 297
lini, ii. 458

Sem. cydoniorum, ii. 458
Sem. sabadellæ, 234
Senega snakeroot, expectorant, ii. 434
Senna, American, 204
Sennæ folia, 147
analysis of, 148
deteriorates in a humid atmosphere, 150
Serpentaria virginiana, 280
Setons, ii. 260
Sialagogues, ii. 369
Skunk-cabbage, ii. 153
Slippery elm, ii. 452
Small pox, opium used in, ii. 26
Smilax sarsaparilla, ii. 227
Snakeroot, Virginia, tonic, 280
Sodæ boras, 446
Sodæ carbonas, antacid, 242
expectorant, ii. 440
Soluble tartar, 199
Soapwort, ii. 233
Solanum nigrum, ii. 89
dulcamara, ii. 92
useful in herpes, &c. ii. 93
Spanish flies, ii. 250
Spider's web, ii. 118
used in intermittents, ii. 119
its soothing effects, ii. 120
in asthma, ii. 121
hysteria, ii. ib.
Spigelia-marylandica, 214
Spæria trifoliata, 89
used with opium in dysentery, 90
Spiritus ætheris nitrosi, ii. 327
Spurred rye, 442
Squills, diuretic, ii. 289
expectorant, ii. 435
Stannum, 231
Stimulants, ii. 160
Stramonium, ii. 80
used in rheumatism, ii. 83
tic doloureux, ii. 84
Strangury, camphor used in, ii. 53
Strychnos nux vomica, ii. 14
its effects, ii. 112
used in paralysis, ii. 113
Strychnine, ii. 114
Sub-carbonas potassæ, ii. 323
Sub-muriate of mercury, 200
employed in very minute doses by Dr. Ayre, 202
sialagogue, ii. 423
Sub-sulphas hydrargyri flavus, emetic, 106
Succini oleum, ii. 158
Sugar of lead, 393
used in dysentery, 397
epilepsy, 398
Sulphate of quinæ, 275
Sulphas sodæ, 318
magnesiæ, 193
Sulphas potassæ, 194
ferri, tonic, 318
cupri, emetic, 102
escharotic, ii. 467
zinci, tonic, 338
astringent, 402
aluminæ, 404
Sulphate of zinc, as an emetic, 79
an over dose not very poisonous, 80
used in hooping-cough, 84
catarrhal affections, ib.
of copper, as an emetic, 102
used in consumption, 103
Sulphur sublimatum, 180
used in rheumatism, 182
dysentery, 183
anasarca, ib.
diaphoretic, ii. 234
Sulphuret of antimony, 62
of iron, used in dropsy, 289
Sulphuric acid, 419
æther, antispasmodic, ii. 155
Super-tartras potassæ, 195, ii. 326
Superacetas plumbi, 393
Sweet spirits of nitre, ii. 327
Swamp sumach, ii. 116
Simplocarpus fœtida, ii. 153

Tænia described, 209
Tartarized antimony, 257
Tartar emetic, escharotic, ii. 235
Tartar emetic, 66
promotes expectoration, 68
curbs the action of the heart and arteries, 69
its modus operandi in fevers, 70, 74
its utility in febrile diseases, 74
in consumption, 75
opacity of the cornea, 77
remedies that counteract its poisonous effects, 78
Tartras potassæ, 199
Tartrate of iron, 292
Tela aranearum, ii. 118
Terebinthinæ oleum, anthelmintic, 288
stimulant, ii. 170
used in chronic rheumatism, ii. 173
obstruction in the bowels, ii. 174
Thorn apple, 80
Terra foliata tartari, 325
Testacea, antacid, 239
Testæ ostrearum, 240
Tetanus, cathartics used in, 132
treated by opium, ii. 36
Thoroughwort, ii. 216
Tic doloureux, cured by belladonna, ii. 75
Tin, 231
Tinctura anti-phthisica, 395
cantharides, rubefacient, ii. 269

Tinctura muriatis ferri, ii. 328
Tobacco, narcotic, ii. 107
errhine, ii. 271
diuretic, ii. 300
Tonics, 243
their modus operandi, 244
Trichocephalus described, 209
Tulip tree, 308
Turpentine oil, rubefacient, ii. 266
Turbethum minerale, errhine, ii. 272
Turpith mineral, an emetic, 104
Typhus, cinchona used in, 265
Typhus, opium used in, ii. 17
camphor used in, ii. 47
Typhus fever, cathartics used in, 116

Ulmus fulva, ii. 452
Unguentum hydrargyri, ii. 412
Uvæ ursi, lithontriptic, ii. 364

Valeriana, ii. 143
Venereal complaints, treated by opium, ii. 40
Verdigris, 330
Virginia snake root, tonic, 280
Vitriol, white, emetic, 79
green, tonic, 318
blue, tonic, 323
Vitriol, white, tonic, 338
astringent, 402
Vitriolated tartar, 194
Volatile alkali, stimulant, ii. 163
Vomiting, mechanism of, 23
explained by Chirac and Magendie, 24
the effects of, 25

Walnut, white, 206
White precipitate of mercury, ii. 427
White willow, 305
vitriol, 338
Wild-cherry bark, tonic, 300
lessens the action of the heart, ib.
Wolfsbane, ii. 85
Worms, symptoms of, 191
Worm moss, 235

Xanthoxylum fraxineum, ii. 231

Zinc, 333
Zinci sulphas, as an emetic, 79
oxidum, tonic, 333
sulphas, tonic, 338
acetate, 341
astringent, 318
Zingiber, ii. 188

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